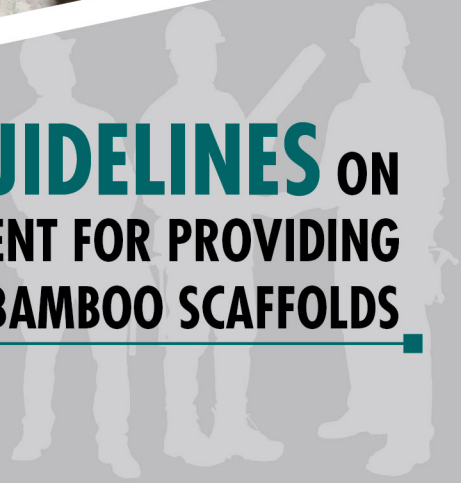




CONSTRUCTION
INDUSTRY COUNCIL
建造業議會



GUIDELINES ON PLANKING ARRANGEMENT FOR PROVIDING WORKING PLATFORMS ON BAMBOO SCAFFOLDS



Disclaimer

Whilst reasonable efforts have been made to ensure the accuracy of the information contained in this publication, the CIC nevertheless would encourage readers to seek appropriate independent advice from their professional advisers where possible and readers should not treat or rely on this publication as a substitute for such professional advice for taking any relevant actions.

Enquiries

Enquiries on these guidelines may be made to the CIC Secretariat at :

CIC Headquarters
38/F, COS Centre,
56 Tsun Yip Street,
Kwun Tong, Kowloon

Tel: (852) 2100 9000
Fax: (852) 2100 9090
Email: enquiry@cic.hk
Website: www.cic.hk

Table of Contents

Preface	Page 3
1. Background and Purpose	Page 4
2. Definitions	Page 5
3. Limitations	Page 6
4. Requirements for Working Platforms on Bamboo Scaffold	Page 6
5. Risk Assessment	Page 7
6. Delineation of Roles and Responsibilities through Agreements or Contracts	Page 7
7. Roles and Responsibilities of the Main Contractors	Page 8
8. Roles and Responsibilities of the Subcontractors	Page 10
Reference List	
Annex A Example of Working Platforms on Bamboo Scaffold.....	Page 11
Annex B Figure B1: Closely Spaced Bamboo Scaffold and Suggested Erection Standard	Page 12
Figure B2: Proper Working Platform for Closely Spaced Bamboo Scaffold.....	Page 13
Figure B3: Details of Ties/Struts Arrangement of Closely Spaced Bamboo Scaffold	Page 14
Figure B4: Access and Egress Openings from the Structure to Closely Spaced Bamboo Scaffold, Erection of Additional Members as Foot-holds and Scaffolding Access and Egress Openings in Off-set Pattern	Page 15

Preface

The Construction Industry Council (CIC) is committed to seeking continuous improvement in all aspects of the construction industry in Hong Kong. To achieve this aim, the CIC forms Committees, Task Forces and other forums to review specific areas of work with the intention of producing Alerts, Reference Materials, Guidelines and Codes of Conduct to assist participants in the industry to strive for excellence.

The CIC appreciates that some improvements and practices can be implemented immediately whilst others may take more time to adjust. It is for this reason that four separate categories of publication have been adopted, the purposes of which are as follows:

- | | |
|---------------------|---|
| Alerts | Reminders in the form of brief leaflets produced quickly to draw the immediate attention of relevant stakeholders the need to follow some good practices or to implement some preventative measures in relation to the construction industry. |
| Reference Materials | Reference Materials for adopting standards or methodologies in such ways that are generally regarded by the industry as good practices. The CIC recommends the adoption of these Reference Materials by industry stakeholders where appropriate. |
| Guidelines | The CIC expects all industry participants to adopt the recommendations set out in such Guidelines and to adhere to such standards or procedures therein at all times. Industry participants are expected to be able to justify any course of action that deviates from those recommendations. |
| Codes of Conduct | Under the Construction Industry Council Ordinance (Cap 587), the CIC is tasked to formulate codes of conduct and enforce such codes. The Codes of Conduct issued by the CIC set out the principles that all relevant industry participants should follow. The CIC may take necessary actions to ensure the compliance with the Codes. |

If you have attempted to follow this publication, we do encourage you to share your feedback with us. Please take a moment to fill out the Feedback Form attached to this publication in order that we can further enhance it for the benefit of all concerned. With our joint efforts, we believe our construction industry will develop further and will continue to prosper for years to come.

1. Background and Purpose

- 1.1 In May 2014, the Construction Industry Council (CIC) issued the 'Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds' (Version 1), clearly explaining the responsibilities of Main Contractors and Subcontractors to ensure that workers can safely use bamboo scaffold to carry out work-at-height.
- 1.2 After over two years' implementation on site, combined with the industry's determination in further improving work safety on bamboo scaffold, the CIC established a task force in October 2016 to review and update the content of the 'Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds' (this publication) with relevant industry stakeholders, to further strengthen and improve work safety on bamboo scaffolds.
- 1.3 This publication update the 'Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds' (Version 1) issued by the CIC in May 2014, and are applicable to works with a contract commencement date of 1 March 2018 (being 6 months after the issue of this publication) or after. If works commencing prior to the above mentioned date are unable to comply with the new requirements of this publication, they should comply with the 'Guidelines on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds' (Version 1) issued in May 2014.
- 1.4 The Labour Department (LD) will make reference to this publication when enforcing safety legislation relating to the use of bamboo scaffolds for work-at-height, such as the "Construction Sites (Safety) Regulations", "Factories and Industrial Undertakings (Safety Management) Regulations", the general duties provisions under the "Factories and Industrial Undertakings Ordinance" and related codes of practice on work safety.

2. Definitions

Main Contractor	In relation to construction work, means any person or firm engaged in carrying out construction work by way of trade or business, either on his own account or pursuant to a contract or arrangement entered into with another person, including the private sector, the Government of the Hong Kong Special Administrative Region or any public body. This includes the registered contractor appointed for a private sector project.
Subcontractor	(a) Any party who enters into a contract with a Main Contractor to perform all or any part of the work which the Main Contractor has undertaken to perform; or (b) Any other person who enters into a contract to perform all or any part of the work which a Subcontractor has undertaken to perform.
Closely spaced bamboo scaffold	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 (大橫杆) (actual diameter equal to or greater than 40mm) above the transoms (小橫杆) (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 100mm, reducing the distance between ledgers for each scaffold layer and helping reduce the risk of workers falling from height when laying planking on or removing planking from bamboo scaffold. Please refer to the 'Code of Practice for Bamboo Scaffolding Safety' issued by the LD for requirements for double-row bamboo scaffold.
Contract commencement date	The contract commencement date is the date stated in the signed contract between the contractor and the client.

3. Limitations

- 3.1 It is important to note that compliance with this publication does not of itself confer immunity from legal obligations in Hong Kong. Employers or contractors are reminded to observe and comply with statutory provisions, relevant codes of practice and other government departments' requirements so as to discharge their legal and other pertinent duties related to work on bamboo scaffolds.

4. Requirements for Working Platforms on Bamboo Scaffold

- 4.1 The erection of bamboo scaffold must comply with one of the following:
- i) Where each scaffold layer has a working platform, gangway or run, Main Contractor should conduct the laying of such. For an example of working platforms laid on each layer of bamboo scaffold, a relevant diagram is at Annex A (Figure A1 and Figure A2); or
 - ii) The entire bamboo scaffold is of a closely spaced bamboo scaffold design, and a suitable working platform is erected at each working position on a scaffold layer.
- 4.2 Apart from referring to the 'Code of Practice for Bamboo Scaffolding Safety' issued by the LD, for reference information on the erection/expansion/alteration of closely spaced bamboo scaffold, please refer to Annex B (Figure B1 to Figure B4).
- 4.3 Each working platform, guard-rail, barrier, toe-board, railing, covering for opening, gangway or run must comply with the provisions of Schedule 3 of the Construction Sites (Safety) Regulations applicable to that type of safety equipment.

- 4.4 To ensure the strength, loading and stability of bamboo scaffold, Main Contractors should comply with relevant provisions of the 'Code of Practice for Bamboo Scaffolding Safety' issued by the LD, including (i) bamboo scaffold exceeding 15m in height must be designed and approved by a professional engineer; (ii) for bamboo scaffold not exceeding 15m in height, if more than 2 consecutive layers of working platforms are used at the same time at any bay (space between two adjacent standards along the face of a scaffold) for light duty purpose or more than 1 working platform for heavy duty purpose, the stability of the scaffold should be verified by a professional engineer.

5. Risk Assessment

- 5.1 Before commencing work, Main Contractors should conduct job-specific risk assessment to identify the locations of working at height and the associated hazards, assess the level of risk, and formulate safe method statements and risk control measures accordingly, which include minimising the need to work-at-height.
- 5.2 If there is a need to work-at-height, the contractors should consider all factors, including the work nature, the appliances and materials to be used, working height, location, working environment and access and egress openings, in the implementation of effective safety measures.

6. Delineation of Roles and Responsibilities through Agreements or Contracts

- 6.1 The Main Contractors and Subcontractors should clearly delineate their roles and responsibilities in the provision, laying and use of planks and toe-boards as working platforms on bamboo scaffolds through agreements or contracts.

6.2 When formulating the contracts, the Main Contractors and Subcontractors should clearly stipulate the arrangements (including the responsibilities of the parties concerned) in contract terms to ensure that relevant safety measures can be fully implemented.

7. Roles and Responsibilities of the Main Contractors

7.1 Providing suitable planks and toe-boards, and ensuring planks are of good construction with sufficient strength and thickness. For details please refer to Schedule 3 of the Construction Sites (Safety) Regulations.

7.2 Providing sufficient amounts of planks and toe-boards, to ensure:

- i) the entire bamboo scaffold has been laid with suitable working platforms for workers of all trades to use continuously; or
- ii) if working platforms are erected on bamboo scaffold of closely spaced bamboo scaffold design, then appropriate planks and toe-boards should be laid at the working positions of scaffold layer.

7.3 Appropriate laying of planks and toe-boards and ensuring their safe condition.

7.4 When laying working platforms, if necessary, a professional engineer should be appointed to ensure whether the bamboo scaffold has sufficient bearing capacity, to avoid too many workers working in or moving through the same bay of the scaffold, resulting in the scaffold's bearing capacity being exceeded.

7.5 Establishing and strictly enforcing a supervisory regime to ensure that planks and toe-boards are laid safely.

7.6 Ensuring that the strength and stability of the working platforms and the bamboo scaffolds are inspected by a competent person.

7.7 Managing and supervising the proper use of the working platforms.

7.8 Ensuring debris on each scaffold layer is regularly cleared, to avoid accumulation of waste (for example concrete waste).

7.9 Selection of Subcontractors

- i) When engaging Subcontractors, the Main Contractors should select those who can meet work safety standards, including those with a good safety track record and with the necessary skills, and ensure that the Subcontractors are capable of implementing adequate safety measures.
- ii) During the selection process, the Main Contractors should require the Subcontractors submit an outline of a work plan, and give preliminary information on the work. Depending on the complexity and requirements of the work, the outline should precisely describe the work procedures, the necessary facilities, the monitoring and emergency procedures, etc.
- iii) Once appointed, the Subcontractor should base on the outline submitted earlier, formulate a detailed work plan comprehensively explaining the method of carrying out the work safely and effectively, and coordinate with the Main Contractor who should then incorporate the detailed work plan into the project's safety plan.

7.10 Monitoring the Safety Performance of Subcontractors

- i) A monitoring system should be developed, implemented and maintained by the Main Contractors to ensure that all Subcontractors engaged in bamboo scaffolding work, or other Subcontractors using the bamboo scaffolds, are fully aware of and have discharged their safety responsibilities and that the relevant safety legislation and the safety requirements of agreements or contracts are complied with.

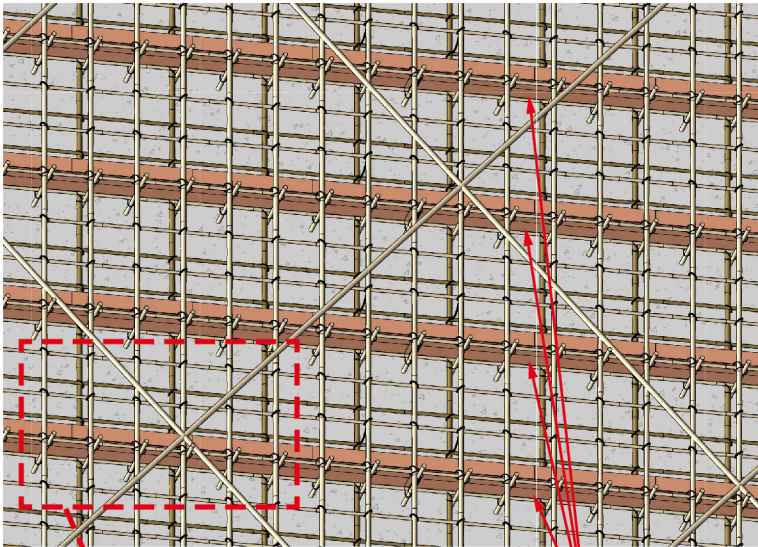
- ii) Main Contractors should constantly review the work and the safety performance of the Subcontractors and request that the Subcontractors regularly attend safety meetings. If any unsafe working conditions are found, the Main Contractors should suspend the works involved immediately. The works under suspension can only be resumed when improvement measures have been implemented effectively.

8. Roles and Responsibilities of the Subcontractors

- 8.1 Appointing a person to communicate and coordinate with the Main Contractors' appointed person/team in order to ensure correct and safe use of the working platforms (especially working platforms erected on closely spaced bamboo scaffold).
- 8.2 Ensuring workers/employees properly and correctly use working platforms.
- 8.3 Providing necessary safety information, instruction, training and supervision to the workers concerned.
- 8.4 Regularly clearing debris from each scaffold layer, to avoid accumulation of waste (for example concrete waste).
- 8.5 Preventing too many workers working in or moving through the same bay of the scaffold, resulting in the scaffold's bearing capacity being exceeded.
- 8.6 During the works period, informing the Main Contractors immediately if any damage to the bamboo scaffold, planks or toe-boards is discovered, and replacing the defective parts.

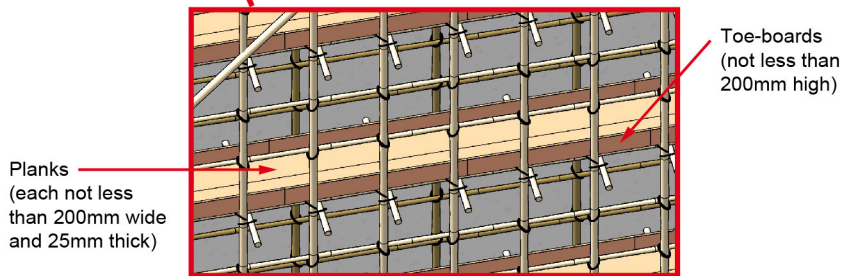
Annex A

Example of Working Platforms on Bamboo Scaffold



(Figure A1: not to scale)

Working platform laid on each scaffold layer

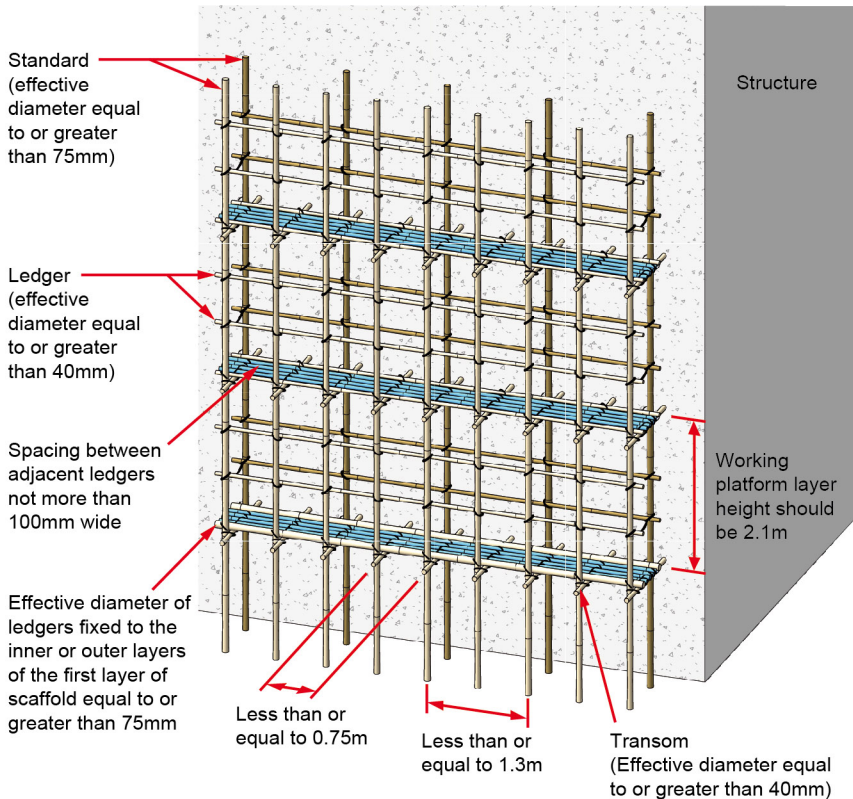


(Figure A2: not to scale)

Annex B

Figure B1: Closely Spaced Bamboo Scaffold and Suggested Erection Standard (Not to scale)

- Ledger bamboo-to-bamboo spacing not more than 100mm wide (marked blue in the diagram)
- Ledgers supported by transoms

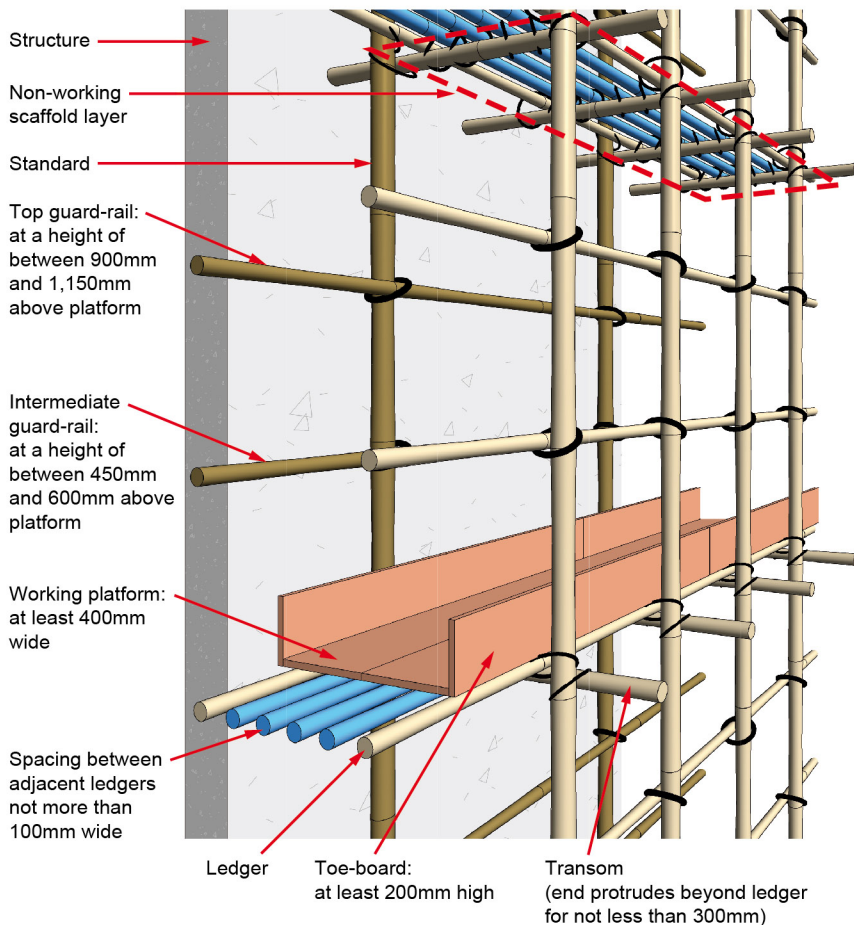


Note:

- For all standards, and all ledgers used as the first layer of scaffold, the bamboo thickness should be not less than 10mm.
- For working platforms on closely spaced bamboo scaffold, if there are 2 or more horizontal bamboo members as protection, and the space between the horizontal bamboo members is between 750mm and 900mm, the guard-rail height requirement may be waived.
- All working platforms, guard-rails, barriers, toe-boards, railings, coverings for openings, gangways or runs must comply with the provisions of Schedule 3 of the Construction Sites (Safety) Regulations applicable to that type of safety equipment.

Figure B2: Proper Working Platform for Closely Spaced Bamboo Scaffold (Not to scale)

- Ledger bamboo-to-bamboo spacing not more than 100mm wide (marked blue in the diagram)
- Ledgers supported by transoms

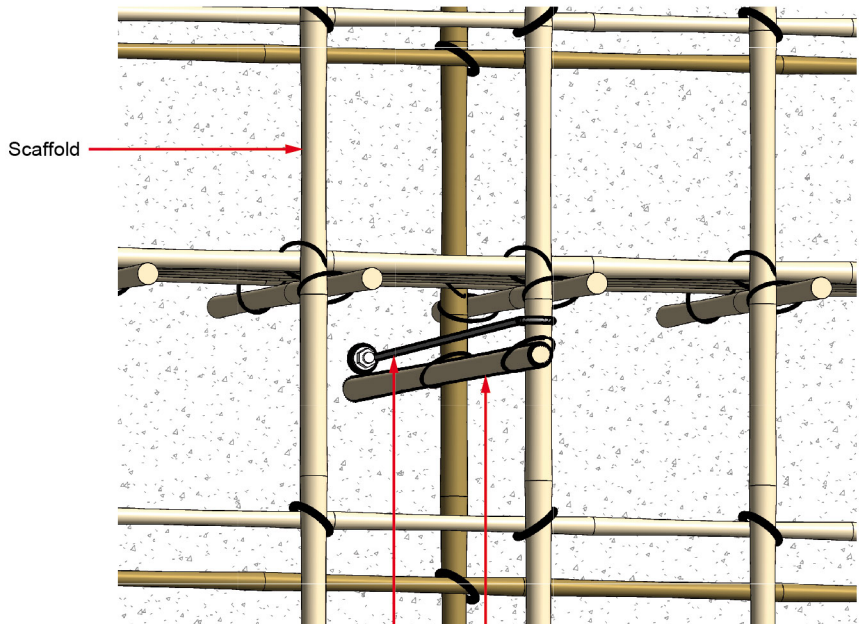


Note:

- The scaffold's boards should be not less than 200mm wide and 25mm thick; or if the boards are thicker than 50mm, not less than 150mm wide.
- Where planks consist of open metal work, the interstices may not exceed 4,000mm² in area.
- For working platforms on closely spaced bamboo scaffold, if there are 2 or more horizontal bamboo members as protection, and the space between the horizontal bamboo members is between 750mm and 900mm, the guard-rail height requirement may be waived.

Figure B3: Details of Ties/Struts Arrangement of Closely Spaced Bamboo Scaffold (Side elevation – Not to scale)

- Ledger bamboo-to-bamboo spacing not more than 100mm wide
- Ledgers supported by transoms



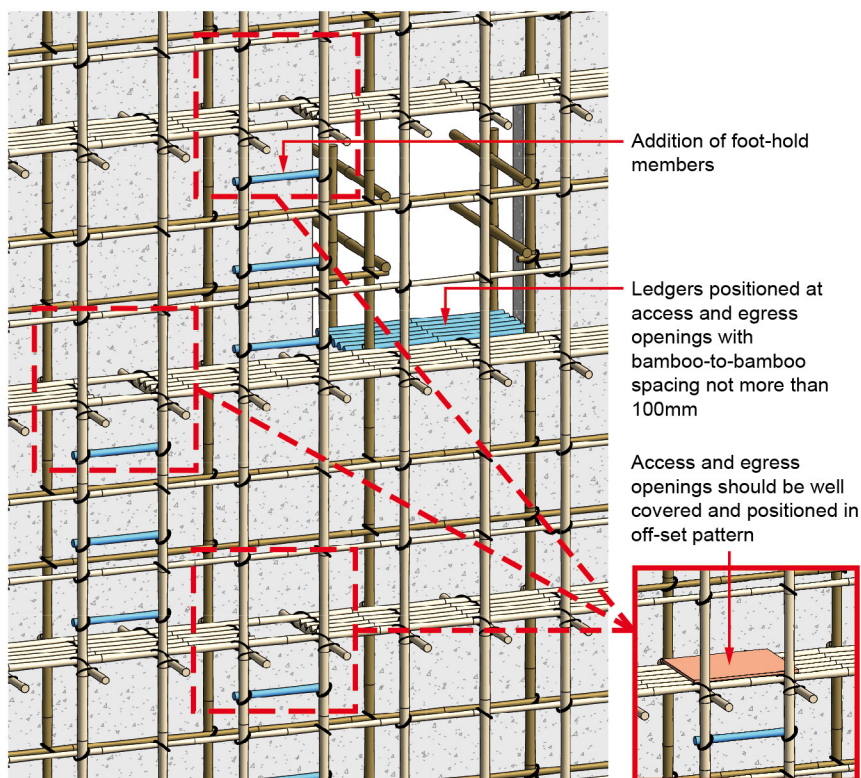
Steel wires (minimum diameter 6mm) are connected between the scaffold and structural anchor bolts (preset into structurally sound members of the structure) to form ties

Further, at every tie position, a short length of bamboo of effective diameter not less than 40mm (acts as a strut) should be connected between the inner scaffold and the structure to restrict any inward movement of the scaffold

Note:

- For structures under construction, structural anchors for the ties can be preset into structurally sound members of the structure.
- For existing structures, structural anchors can be provided by expansion type anchor bolts set into structurally sound members of the structure.

Figure B4: Access and Egress Openings from the Structure to Closely Spaced Bamboo Scaffold, Erection of Additional Members as Foot-holds and Scaffolding Access and Egress Openings in Off-set Pattern (Not to scale)



Note:

- (i) In order to provide safe access and egress from the work location for workers erecting or using scaffold, one method is to provide a safe gangway in the space between the scaffold and the structure. Each gangway or run shall comply with the provisions of Schedule 3 of the Construction Sites (Safety) Regulations.
- (ii) Access and egress openings constructed on scaffold layers must be positioned in an off-set pattern, and an appropriate number of access and egress openings positioned in accordance with working requirements.
- (iii) Access and egress openings must be well covered when not in use. Every covering provided for an opening shall be so constructed as to prevent the fall of persons, materials and articles, and clearly and boldly marked as to show its purpose or be securely fixed in position.
- (iv) Where additional bamboo members are erected as foot-hold members for scaffold workers or scaffold users to climb from one layer to another ('rungs'), the spacing between two adjacent rungs should comply with overseas or international standards or regulations, such as British Standard BS EN 131-1, such spacing should be not less than 250mm and not more than 300mm.
- (v) Debris must be regularly cleared from each scaffold layer and/or working platform to avoid accumulation of waste (for example concrete waste).
- (vi) If the scaffold's width is too narrow, such that access and egress openings cannot be positioned in an off-set pattern, other practicable methods should be considered to provide sufficient and appropriate safe access and egress.



Feedback Form

[GUIDELINES on Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds (Version 2)]

Thank you for reading this publication. To improve our future editions, we would be grateful to have your comments.

(Please put a " ✓ " in the appropriate box)

1. As a whole, I feel that the publication is:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Informative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comprehensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Useful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does the publication enable you to understand more about the Planking Arrangement for Providing Working Platforms on Bamboo Scaffolds?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No Comment <input type="checkbox"/>		
3. Have you made reference to the publication in your work?	Quite Often <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Never <input type="checkbox"/>		
4. To what extent have you incorporated the recommendations of the publication in your work?	Most <input type="checkbox"/>	Some <input type="checkbox"/>	None <input type="checkbox"/>		
5. Overall, how would you rate our publication?	Excellent <input type="checkbox"/>	Very Good <input type="checkbox"/>	Satisfactory <input type="checkbox"/>	Fair <input type="checkbox"/>	Poor <input type="checkbox"/>
6. Other comments and suggestions, please specify (use separate sheets if necessary).					
Personal Particulars (optional)* :					
Name : <u>Mr. / Mrs./ Ms./ Dr./ Prof./ Ir / Sr ^</u>					
Company : _____					
Tel : _____					
Address : _____					
E-mail : _____					

* The personal data in this form will be used only for this survey. Your data will be kept confidential and dealt with only by the Construction Industry Council.

^ Circle as appropriate.

Please return the feedback form to:

CIC Secretariat – Council Services

E-mail : enquiry@cic.hk

Address : 38/F, COS Centre, 56 Tsun Yip Street, Kwun Tong, Kowloon

Fax No : (852) 2100 9090

