Practice Notes For Construction Managers
PNCM 8: Metal Scaffolding – First Issue, November 2007
(Index under: Temporary Works)

Contents

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PRACTICE NOTES FOR CONSTRUCTION MANAGERS

PNCM 8: METAL SCAFFOLDING

1. Scope of this Practice Note

Metal scaffolding has been widely used in Hong Kong. The system is safer and offers higher performance when compared with the traditional forms of bamboo scaffolding system.

This practice note provides general guidance on the general aspects that a construction manager should) consider and comply with in employing metal scaffolding for construction projects.

2. Definition of Metal Scaffolding

Metal Scaffolding refers to scaffoldings with metal components as structural skeleton, which is commonly used as working platforms at the building envelope and as falsework to support formwork for in-situ concrete construction.

3. Specific Terms

3.1 Competent Person
A person has substantial training and practical experience in metal scaffolding works.

3.2 Trained workman
A scaffolder responsible for on-site erection, addition, alteration and dismantling of metal scaffolds under the immediate supervision of a competent person, and has completed a formal training in metal scaffolding.

4. Statutory Requirements - Relevant Ordinance, Regulations & Codes of Practice

4.1 Factories & Industrial Undertakings Ordinance, Chapter 59 (F&IU)
Section 6A and 6B of the Ordinance imposes general duties on proprietors and persons employed to provide and to exercise due care for a safe and healthy environment.

4.2 Construction Sites (Safety) Regulations, Chapter 59I (CSSR)
Reg. 38A – Ensure safety of places of work;
Reg. 38B – Prevention of falls from a height of 2m or more;
Reg. 38C – Safe means of support;
Reg. 38D – Construction and maintenance of scaffolds, etc.;
Reg. 38E – Trained workman to erect scaffolds under supervision;
Reg. 38F – Inspection of scaffolds;
Reg. 38H – Defenses to regulation 38B(1) and 38C;
Reg. 38I – Duty to wear safety belt;
Reg. 48 – Wear safety helmet;
Reg. 49 – Protection from falling materials;
Reg. 52 – Materials kept on construction sites.

4.3 Occupational Safety and Health Ordinance, Chapter 509 (OSH)
Section 9 – Issuance of Improvement Notice by Commissioner of Labour requiring the rectification of non-conformities within a specific period.

Section 10 – Issuance of Suspension Notice by Commissioner of Labour requiring suspension of an activity due to contravention.

4.4 "Code of Practice for Metal Scaffolding Safety" issued by the Occupational Safety and Health Branch of Labour Department.

4.5 Practice Note for Authorized Persons and Registered Structural Engineers No. 184 – Code of Practice for Scaffolding Safety issued by the Buildings Department (Oct 1995).

4.6 Practice Note for Registered Contractor No. 26 – Use of Plastic Sheet to Cover Scaffolding Outside Buildings (May 1995).

4.7 Practice Note for Registered Contractors No. 28 – Code of Practice for Scaffolding Safety (Oct 1995).

5. Statutory Forms

Form 5 – A scaffold should be inspected by a competent person preceding the followings:

i) Taken into use for the first time, and
ii) At regular intervals not exceeding 14 days immediately prior to each use, and
iii) After exposing to adverse weather conditions, etc.

Records of inspection should be documented in Form 5 and placed adjacent to the scaffold.

6. Planning and Design

6.0 Safe means of access should be provided for erection, use, alteration, and dismantling.

6.1 Scaffold(s) should be ensured safe at different stages of erection / alteration / dismantling, and should be well designed and planned beforehand.

6.2 A metal scaffolding system l should) be designed to withstand:
a) the self-weight of the whole scaffold system;
b) construction and working loads (imposed loads);
c) wind loads.

6.3 The design of a simple system should follow strictly and comply with suppliers'/ manufacturers' catalogues or guidelines. For complex system(s), it is recommended to be designed by a professional engineer.

6.4 Minimum imposed loads requirement (extracted from COP for MSS):

a) Distributed load (kN/m2) on a platform:

Inspection	Light	General	Heavy	Masonry/Special
0.75	1.5	2.0	2.5	3.0

b) Concentrated load on any 300mm square plan or at the end of a cantilever = 2.0 kN

6.5 (The design of wind loads should be based on the " Code of Practice on Wind Effects in Hong Kong 2004" issued by Buildings Department of HKSAR.

6.6 A bonding system to earth should be provided

7. Construction

7.0 No defective material or parts should be used.

7.1 Scaffolds should be erected, added to, or altered by trained workmen under the immediate supervision of a competent person.

7.2 A Scaffold System should be placed on firm and adequate supports.

7.3 A Scaffold System should be fastened onto the structure or the building, using firm and adequate ties and struts. Provide longitudinal, transverse and diagonal bracings to ensure the stability of the system.

7.4 The clearance between working platforms and the structure / building should not exceed 300mm wide.

7.5 When a Scaffold System is covered by plastic sheet, flame retardant sheeting should be used. Scaffold Systems should be reinforced to withstand strong winds. Obstruction(s) of natural ventilation and lighting the by sheeting should be avoided.

7.6 Good Practice:

- Erect protective canopy(ies) of nominal width 3600mm at a maximum height of 6m above ground for high-rise buildings or structures.

- Provide a sloping catch-fan at not more than 15m vertical intervals to give minimum horizontal projection coverage of 1500mm.

8. Inspection and Maintenance

8.1 A new scaffold should only be used after an inspection is conducted by a competent person, while being taken into use for the first time, regular inspection(s) at intervals not

exceeding 14 days, additional inspection should be carried out after any substantial addition or alteration and after exposure to adverse weather.

8.2 Defects found during inspection should be rectified immediately.

8.3 An updated and endorsed Form 5 should be posted up on a scaffold.

8.4 For unsafe scaffold(s), safety measures should be taken to prohibit its use.

8.5 A "Smoking is Prohibited" sign in Chinese and English should be posted at suitable locations where scaffold is erected.

9. Dismantling

9.1 Dismantling works should be carried out by trained workmen under the immediate supervision of a competent person.

9.2 Dismantling works should be carried out according to dismantling plan and proper procedures.

9.3 Independent Life Line should be provided for the anchorage of fall arrestor.

9.4 Supervisor(s) from metal subcontractor and the contractor's frontline staff should be allocated throughout the whole dismantling period.

9.5 A metal scaffold should be so repaired to ensure its stability before dismantling.

9.6 Make sure all workers who carry out dismantling works have received the task related induction training conducted by safety officer(s).

9.7 **Stop the work** if any scaffolder is found not wearing or not using safety harness properly.

9.8 Fence off dismantling areas at ground level / public area and post up warning notices in the vicinity.

9.9 Never throw, tip or shoot down scaffolding materials.

9.10 Sufficient time should be allowed for the dismantling work in order to avoid carrying out the dismantling work in rush.

10. Technical Requirements

10.1 Data from Manufacturer:
Obtain load resisting capacities, working stresses and permissible stresses, etc. from the catalogues or technical literature of proprietary metal scaffoldings.

10.2 Relevant standards
British Standard 1139 – Metal scaffolding;
British Standard 2482 – Specification for timber scaffold boards;
British Standard 5973 – Code of practice for access and working scaffolds and special scaffold structures in steel;
British Standard 5975 – Code of practice for falsework.

10.3 Working Platform

- Ground or supporting structure for a scaffold should be firm at level suitable to carry the designed loads of the scaffold without undue settlement.
- Anchorages used as ties should be tested to ensure their sufficient strength.
- Bracings should be extended from the base to the top of the scaffold.
- Width of working platform, gangway or run should be not less than 400mm.
- Width of gangway or run used for the movement of materials should be not less than 650mm.
- Guard-rail should be provided for any working platform exceeding 2.0 meter high to protect people from falling.
- Top guard-rail should be installed not less than 900mm and not more than 1150mm.
- Intermediate guard-rail should be installed not less than 450mm and not more than 600mm
- Toe-board should be installed not less than 200mm in high
- Toe-board is not be required for stair
- Working platform should be cleared of debris, rubbish, etc.

11. Responsibility of a Construction Manager

11.0 To ensure job hazard analysis had been conducted to identify any potential hazards in the process of erection, use, alteration, and dismantling. Particular attention must be paid in areas such as water tank, lift shaft, light well and re-entrant areas of a building.

11.1 To ensure safety management system is set up, implemented and maintained during the whole process of scaffolding work.

11.2 To ensure the design, plan and method statement of the scaffolding system is duly endorsed by an engineer of the specialist sub-contractor.

11.3 To ensure the erection, addition, alteration and dismantling stages of scaffold are carried out by trained workmen according to the design and method statement under the supervision of competent person.

11.4 To ensure the safety supervisor and safety officer have performed their relevant duty properly.

11.5 To ensure all scaffolding materials are complying with the manufacturer's specification(s).

11.6 To ensure the scaffold is properly maintained and inspected and keep a properly endorsed Form 5 record.

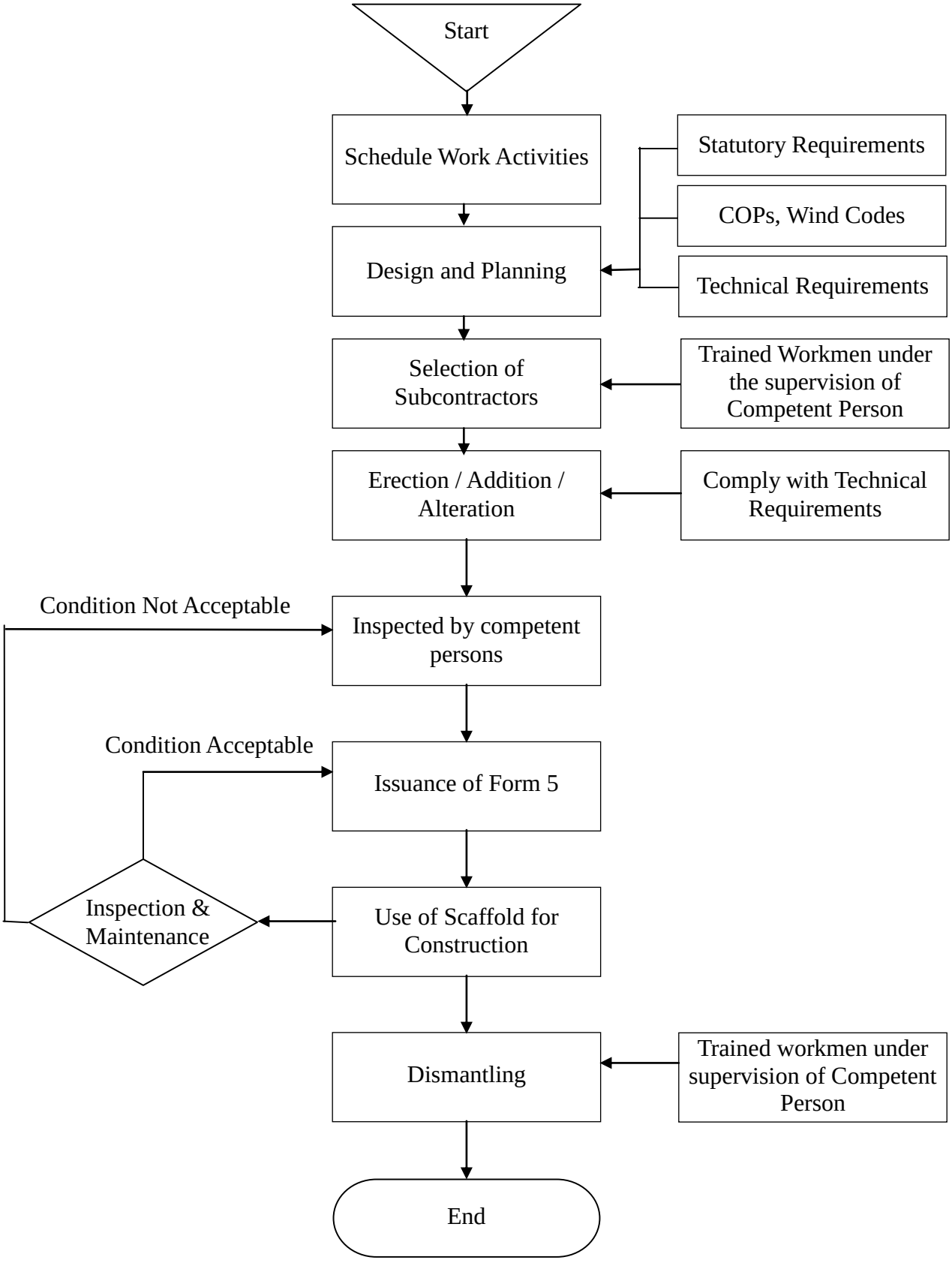
11.7 To ensure no person can enter into the scaffold once defect is found, or during adverse weather and typhoon.

11.8 To ensure the scaffolding is used in a proper manner.

11.9 To ensure the scaffolding plan, method statement, design drawings and specification(s) are kept under continual review, and are made available to all concerned parties in good times.

11.10 To ensure training/instruction is provided to all scaffolders when they first start on a project, to cover the particular requirements of the site.

12. Appendix I – Flow Chart for Construction Management of Metal Scaffold System



13. Appendix II – A sample of Form 5

僱主或承建商姓名或名稱
Name or Title of Employer or Contractor .....
.....
.....

建築地盤地址
Address of Site .....
.....
.....

開始施工日期
Work Commenced Date
.....

表 格 五
FORM 5

[根據第 38F(1) 條]
[reg. 38F(1)]

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

Construction Sites (Safety) Regulations

SCAFFOLDS
REPORTS OF RESULTS OF FORTNIGHTLY OR OTHER INSPECTIONS

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

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

任何合資格的驗貨員或合資格的人，如向承建商交付他明知有任何要項屬虛假的證明書或報告，即屬犯罪；一經定罪，可處罰款二十萬元及監禁十二個月。
Any competent examiner or competent person who delivers to a contractor a certificate or makes a report which is to his knowledge false as to a material particular shall be guilty of an offence and shall be liable on conviction to a fine of $200,000 and to imprisonment for 12 months.

CSSR-F)

14. Appendix III - References

1 Ordinance

- **Factories & Industrial Undertaking Ordinance, Chapter 59, Section 6A and 6B**
- **Occupational Safety and Health Ordinance, Chapter 509, Section 9 and 10**

2 Regulations

- **Construction Site (Safety) Regulations, 38A, 38B, 38C, 38D, 38E, 38F, 38H, 38I, 48, 49, 52 and Third Schedule to the CSSR**

3 Codes of Practice

- **Codes of Practice for Metal Scaffolding Safety by the Labour Department (First Edition, June 2001)**

4 Practice Note

- **PNRC no. 26 by the Buildings Department (May 1995)**
- **PNRC no. 28 by the Buildings Department (Oct 1995)**
- **PNAP no. 184 by the Buildings Department (Oct 1995)**

5 Website

- **Labour Department at** www.labour.gov.hk
- **Occupational Safety & Health Council at** www.oshc.org.hk
- **Buildings Department at** www.info.gov.hk/bd

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