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Table of Contents

Committee Representation iv
Foreword v

1.0 Introduction 1
2.0 Scope 3
3.0 Normative References 4
4.0 Definitions and Abbreviations 5
   4.1 Definition 5
   4.2 Abbreviations 7
5.0 General Requirements 8
   5.1 Acts and regulations 8
      5.1.1 CIDB Act 520 (Amendment 2011) – Fourth Schedule 8
      5.1.2 Factories And Machinery Act 1967 [Act 139] P.U. (A) 328/862 8
   5.2 Product standards, scaffolding systems, certification and marking 9
      5.2.1 Product standard 9
      5.2.2 Types of scaffolding system 10
         5.2.2.1 Prefabricated scaffold (Steel Frame Scaffolding System) 10
         5.2.2.2 Tubular scaffold (Tubes and Coupler/Fittings System) 15
         5.2.2.3 Prefabricated scaffold (Modular Scaffolding System) 16
         5.2.2.4 Steel frame scaffold system 20
         5.2.2.5 Modular scaffold system 20
         5.2.2.6 Tubular scaffold system 20
      5.2.3 Product certification 20
      5.2.4 Product marking 21
   5.3 Planning, product approval, design and submission of scaffolding 22
      5.3.1 Planning for temporary work and HIRARC 22
      5.3.2 CIDB approval for product 23
      5.3.3 Design and submission 23
   5.4 Material selection, quality check, erection, maintenance, alterations, dismantling, storage and care 23
      5.4.1 Material selection 24
      5.4.2 Quality check 24
         5.4.2.1 Routine site quality check (RSQC) 24
         5.4.2.2 Periodic site quality check (PSQC) 25
      5.4.3 Erection, maintenance, alterations, dismantling, storage and care 26

Appendix A: QPASS - How to apply for product approval from CIDB 28
Appendix B: Process A: Flowchart for Design and Drawing Approval for Construction of Scaffolding 29
Committee Representation

This Construction Industry Standard (CIS) was managed and developed by the Construction Industry Development Board Malaysia with the assistance of the Working Group on Temporary Works, which comprises representatives from the following organisations:

Construction Industry Development Board Malaysia
Association of Consulting Engineers Malaysia
Board of Engineers Malaysia
BWYS Group
Construction Research Institute of Malaysia
IQRAMXPERT Sdn. Bhd.
Jabatan Kerja Raya Malaysia
Jabatan Keselamatan Dan Kesihatan Pekerjaan Malaysia
Master Builders Association Malaysia
Persatuan Kontraktor Melayu Malaysia
PERI Formwork Malaysia Sdn. Bhd.
Pertubuhan Akitek Malaysia
SGS (Malaysia) Sdn. Bhd.
The Institution of Engineers Malaysia
Universiti Sains Malaysia
Universiti Teknologi Malaysia
FOREWORD

This Malaysian Construction Industry Standard No. 22 (hereinafter referred as this CIS) is a standard on “Safe Use of Scaffolding In Construction”. It is developed by the Working Group on Temporary Works (WG) with the assistance of Construction Industry Development Board Malaysia (CIDB), which acted as a moderator and facilitator for the working group throughout the development process of this standard.

Two categories of temporary works were identified by the WG - scaffolding and falsework. This CIS focuses on the methods of safe use of scaffolding in construction, which addresses the applicable requirements under the Factories And Machinery Act 1967 (Building Operations And Works Of Engineering Construction - BOWEC) (Safety) Regulation 1986, the CIDB Act 520 (Amendment 2011) and the Malaysian Standards MS 1462 on scaffolding.

This CIS also highlights the professional responsibilities of the Professional Engineer for Temporary Works (PETW) on the design and supervision of the scaffolding works under the PETW responsibility and also the responsibility the Designated Person of the contractor in the, procurement, erection, maintenance, alteration and dismantling of the scaffolding.

This CIS, however, does not cover falsework.

Compliance with this document does not in itself confer immunity from legal obligations.
1.0 INTRODUCTION

In general, temporary works that include scaffolding and falsework, fall under a contractor’s responsibility. However, it must be understood that scaffolding is not falsework as each serve a different function.

Scaffolding’s function is to provide a work crew temporary access to a work area as well as to enable materials to be taken to any place at which such work is performed. This includes any working platform, gangway, skip, ladder or stepladder, guard rail, toe board or other safeguards and all fixings.

Falsework’s function, on the other hand, is to provide support for appliances, machines, other plants and equipment to enable construction of and protect permanent works. It may or may not remain in place during the completion of the works.

Temporary works are significantly and widely used in the construction industry. However, numerous reports have surfaced in the media about failures of scaffolding and falsework. The main reasons can be attributed to the lack of quality of the material, structural integrity, and lack of attention on the safety aspects in the installation, maintenance and dismantling of scaffolding and falsework, especially during the boom period in the last decade.

Failures or collapses normally result in human injuries or fatalities, property damage, delays in delivering services and loss of revenue to project owners and the companies involved and, particularly, to the contractors. Hence prevention of failures or collapses is necessary.

Correspondingly, in addition to the already available provisions in the Building Operations And Works Of Engineering Construction (BOWEC), professional bodies such as the Board of Engineers Malaysia (BEM), The Institution of Engineers Malaysia (IEM) and Master Builders Association of Malaysia (MBAM) have taken steps in preventing such failures.

BEM published “Guidelines on the Role and Responsibility of Professional Engineers for Temporary Works During Construction Stage” as a guide for all Professional Engineers who are involved in temporary works as well as to remind them of their role and responsibility in ensuring the safety and interest of the public and workers at site are safeguarded.
IEM, in response to this concern and to address the problems associated with temporary works failure, has formed a special committee called the Position Paper Committee, which was given the mandate to study the causes of failures and to recommend suitable measures to mitigate such failures. The committee also produced a Policy Statement that could be forwarded to relevant authorities and agencies so that appropriate actions can be taken. IEM published a Position Statement in January 2015 entitled “Prevention Of Collapse Of - Part A: Scaffolding And Part B: Falsework”, which was prepared by the Civil And Structural Technical Division.

MBAM published a “Handbook For Hazard Identification, Risk Assessment & Risk Control (HIRARC)”, which create a better understanding and awareness on hazards and risk associated with scaffolding.

The CIDB Act 520 (Amendment 2011) has authorised CIDB to regulate the construction products as per Section 33C(1), Section 33D and Section 33D(2). All construction materials/products listed in the Fourth Schedule of Act 520 (Amendment 2011) are required to obtain CIDB’s Certificate of Standards Compliance or “Perakuan Pematuhan Standard” (PPS). Scaffolding is included in the Fourth Schedule for conformity to the Malaysian Standard MS 1462 series of standards.

In this Construction Industry Standard (CIS) publication, all product requirements are referred to the Malaysian Standard MS 1462 series of product standards for materials and scaffolding systems. However, several diagrams, values and tables are reproduced in this CIS for illustration purposes only as to facilitate an overall understanding and appreciation on various types of scaffolding systems. Should there be any discrepancies between these illustrations and the information and requirements in the product standards, except for clause 5.2.5 Marking, which is an addition in this CIS, the information in the product standards shall prevail.

Although both scaffolding and falsework are categorised under the same heading of temporary works, the CIS for scaffolding and falsework are published separately due to the difference in their functions.

This CIS is on specifically on Scaffolding only.
2.0 SCOPE

2.1 This CIS covers the use of scaffolding complying with the MS 1462 series of Malaysian Standards. It is in compliance with the regulatory requirements of the following Malaysian Laws under these Acts:

a) CIDB Act 520 (Amendment 2011)\textsuperscript{1}

b) Factories And Machinery Act 1967 [Act 139] P.U. (A) 328/86\textsuperscript{2}

Factories And Machinery (Building Operations And Works Of Engineering Construction) (Safety) Regulation 1986

2.2 It also covers:

a) The engagement of Professional Engineers Temporary Works (PETW) in the design of scaffolding

b) Submission to the Department of Occupational Safety And Health (DOSH)

c) Engagement of designated person in the supervision of the erection, modification and dismantling of the scaffolding by a contractor.

2.3 Focus is on the frame, tubular and modular scaffolding using mainly metal-based material.

2.4 This CIS is applicable for use of scaffolding in temporary\textsuperscript{3} works for Class 1 minor temporary, Class 2 major temporary works and Class 3 temporary works that form part of permanent works and BOWEC requirements.

NOTE 1: Product in Fourth Schedule of the CIDB Act shall obtain the approval of CIDB before it could be used in the construction industries.

NOTE 2: A contractor need to comply with this Act and engage PETW in the design\textsuperscript{4} and Competent person in the erection, alteration and dismantling of scaffolding.

NOTE 3: BEM Guidelines No.:001 classify the temporary works into three main classes, namely:

Class 1 : Minor Temporary Works

Class 2 : Major Temporary Works

Class 3 : Temporary Works that form part of Permanent Works

NOTE 4: Design (includes analysis and design calculation, specification and working drawing).
3.0 NORMATIVE REFERENCES

The following normative references are indispensable to the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the normative references (including amendments) applies.

3.1 CIDB Act 520 (Amendment 2011) - Fourth Schedule.


3.3 Registration of Engineers Act 1967 (Amendment 2015).

3.4 Board Of Engineers Malaysia Guidelines No.:001 - Guidelines On The Role And Responsibility Of Professional Engineers For Temporary Works During Construction Stage.

3.5 The Institution of Engineers Malaysia - Revised Position Statement January 2015 - Prevention Of Collapse Of Part A: Scaffolding And Part B: Falsework - prepared by the Civil And Structural Technical Division.


3.7 Malaysian Standard MS 1462-1:2012, Metal Scaffolding – Part 1: Prefabricated scaffolds - Specifications for steel frame scaffolding (First revision).

3.8 Malaysian Standard MS 1462-2-1-2010, Metal Scaffolding – Part 2: Tubular (Tube and coupler) scaffolds – Section 1: Specifications for steel tubes.

3.9 Malaysian Standard MS 1462-2-2-2010, Metal Scaffolding – Part 2: Tubular (Tube and coupler) scaffolds – Section 2: Specifications for aluminium tubes.

3.10 Malaysian Standard MS 1462-2-3-2011, Metal Scaffolding – Part 2: Tubular (Tube and coupler) scaffolds – Section 3: Specifications for steel and aluminium couplers, fitting and accessories.
3.11 Malaysian Standard MS 1462-3-1-2011, Metal Scaffolding – Part 3: Prefabricated scaffolds – Section 1: Specifications for steel and aluminium modular system scaffoldings.


3.13 Malaysian Standard MS 1462-4-1-2013, Metal Scaffolding – Part 4: Temporary Works equipment – Section 1: Scaffolds - Performance requirements and general design.


NOTE 5: Where a standard has been revised, the reference should be made to the new standard.

4.0 DEFINITIONS AND ABBREVIATIONS

4.1 Definition

For the purpose of this CIS, the terms and definitions given in the Acts cited in this CIS, and the following apply:

(1) “Class 1 Temporary Works (Minor)” means temporary works that when subject to any failures, defects or losses of serviceability, would unlikely affect the public and workers safety and life.

(2) “Class 2 Temporary Works (Major)” means temporary works that when subject to any failures, defects or losses of serviceability would likely affect public and workers safety and life.

(3) “Class 3 Temporary Works” means temporary works that form part of Permanent Works.

(4) “Consultant” means Professional Engineers with a practicing certificate registered with the Board of Engineers Malaysia (BEM) who are the Submitting Person (Qualified Person) to the Authority and Specialists and Professional Engineers (including specialist) whose names appear in the drawings used for tender or construction.
(5) "Contractor" means a person who carries out or completes or undertakes to carry out or complete any construction works.

(6) “Component” means part of a scaffolding system, which cannot be dismantled further, e.g. a diagonal or a vertical frame.

(7) "Designated person" means a competent person appointed by a contractor to carry out any supervision or inspection for the erection maintenance, alteration and dismantling of scaffolding.

(8) “Steel frame scaffolding” means scaffolding manufactured in such a way that the geometry of the scaffold is predetermined and the relative spacing of the principal members are fixed. It shall comply with MS 1462-1.

(9) “Hazard” means a source or a situation with a potential for harm in terms of human injury or ill health, damage to property, damage to the environment or a combination of these.

(10) “Horizontal frame” means a horizontal component connecting the horizontal members of two vertical frames, providing stiffness to a horizontal plane.

(11) “Modular scaffolding system” means scaffolding system in which transoms and standards are separate components, where the standards provide facilities at predetermined (modular) intervals for the connection for other scaffold components. It shall comply with MS 1462-3-1 and MS 1462-3-2.

(12) “PPS” means a “Perakuan Pematuan Standard” certificate issued by CIDB for a particular product that has complied with standard(s) specified by CIDB for regulatory purpose under Schedule IV of CIDB Act 520 (Amendment 2011).

(13) "Professional Engineer" means Professional Engineers with a practicing certificate registered under subsection 10(2) of the Registration of Engineers Act 1967 [Act 138] (Amendment 2015).

(14) "Professional Engineer for Temporary Works (PETW)" means the Professional Engineer (PE) with a practicing certificate employed by contractors to carry out design, endorsement and supervision of temporary works.

(15) "Scaffold" also referred as “scaffolding” means any temporarily provided structure on or from which persons perform work in connection with operations or works, and any temporarily provided structure which enables persons to obtain access to or which
enables materials to be taken to any place at which such work is performed, and includes any working platform, gangway, skip, ladder or step-ladder which does not form part of such structure together with any guard-rail, toe-board or other safeguards and all fixing, but does not include a lifting appliance or a lifting machine or a structure used merely to support such an appliance or such a machine as to support other plant or equipment.

(16) “Scaffold system” means a) set of interconnecting components, mostly purpose designed for the scaffold system, b) the assessed standard set of system configuration and c) the product manual.

(17) “System configuration” means configuration of the scaffold system comprising a complete scaffold or a representative section from it.

(18) “Standard set of system configuration” means specific range of system configuration for the purpose of structural design and assessment.

(19) “Standard” means when use in a scaffold system refers to upright member of the scaffold.

(20) “Transom” means horizontal member normally in the direction of the smaller dimensions of the working scaffold.

(21) “Tubular scaffolding system” is a scaffolding system that uses tubes as vertical posts, ledgers, transoms, bearers, braces and ties and to be connected/jointed with couplers. It shall comply with MS 1462-2-1, MS 1462-2-2 and MS 1462-2-3.

4.2 Abbreviations

The abbreviations used in this CIS are as follows:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEM</td>
<td>Board of Engineers Malaysia</td>
</tr>
<tr>
<td>CB</td>
<td>Certification Body</td>
</tr>
<tr>
<td>CIDB</td>
<td>Construction Industries Development Board Malaysia</td>
</tr>
<tr>
<td>CIS</td>
<td>Construction Industry Standard</td>
</tr>
<tr>
<td>DOSH</td>
<td>Department Of Occupational Safety and Health, Malaysia</td>
</tr>
<tr>
<td>EN</td>
<td>European Standards</td>
</tr>
<tr>
<td>HIRARC</td>
<td>Hazard Identification, Risk Assessment, and Risk Control</td>
</tr>
<tr>
<td>IEM</td>
<td>The Institution of Engineers Malaysia</td>
</tr>
<tr>
<td>MBAM</td>
<td>Master Builder’s Association Malaysia</td>
</tr>
<tr>
<td>MS</td>
<td>Malaysian Standard</td>
</tr>
</tbody>
</table>
5.0 GENERAL REQUIREMENTS

The manufacturers, suppliers, contractors, PETW and the consultants shall familiarise and understand the following requirements to ensure compliance to the acts and regulations, standards and design practice for safe use of scaffolding in construction.

5.1 Acts and regulations

5.1.1 CIDB Act 520 (Amendment 2011) – Fourth Schedule

(1) With the Act 520 (Amendment 2011), CIDB is authorised to enforce and regulate construction products with the provisions of the CIDB Act. All construction materials/products listed in the Fourth Schedule of Act 520 (Amendment 2011) are required to obtain CIDB’s Certificate of Standards Compliance (PPS).

NOTE 6: The related provisions of the CIDB Act 520 (Amendment 2011) are:

a) “Section 33C - The Lembaga shall, in the manner determined by the Lembaga, certify the construction material used in the construction industry and specified in the Fourth Schedule is in accordance with the standard specified in that Schedule”.

b) “Section 33D(1) - A person shall not deal or undertake to deal, whether directly or indirectly, with the construction materials specified in the Fourth Schedule unless the construction materials have been certified by the Lembaga”.

c) “Section 33D(2) - Any person who deals or undertakes to deal with the construction materials specified in the Fourth Schedule without the certification of the Lembaga shall be guilty of an offence and shall, on conviction, be liable to a fine of not less than RM10,000 but not more than RM500,000”.

NOTE 7: Scaffolding is included in the Fourth Schedule and the specified standards is MS 1462. CIDB has established a procedure for applying for the PPS under the QPASS program (Appendix A).

5.1.2 Factories And Machinery Act 1967 [ACT 139] P.U. (A) 328/86.


(1) In the construction industries, the responsibility for scaffolding lies mainly with the contractor. This is clearly spelt out in the Factories And Machinery Act –
(Building Operations And Works Of Engineering Construction) Regulation 1986 (BOWEC) under Regulation 4 (Obligation)\(^8\).

NOTE 8: BOWEC

"Regulation 4. Obligation.

(1) It shall be the duty of every contractor and every employer, who undertakes any of the operation or works to which these Regulations apply:

(a) to comply with such of the requirements of these Regulations as affect him or any person employed by him.

Provided that the requirements of these Regulations shall be deemed not to affect any employee if and so long as his presence in any place is not in the course of performing any work on behalf of his employer and is not expressly or impliedly authorized or permitted by his employer;

(b) to comply with such of the requirements of these Regulations as relate to any work, act or operations performed or about to be performed by any such contractor or employer,

and it shall be the duty of every contractor and every employer who ereets or alters any scaffold to comply with such of the requirements of these Regulations as relate to erection or alteration of scaffold having regard to the purpose for which the scaffold is designed at the time of erection or alteration; and of every contractor and every employer who ereets, installs, works or uses any plant or equipment to which any of the provisions of these Regulations applies, to erect, install, work or use such plant or equipment in a manner which complies with those provisions."

5.2 Product standards, scaffolding systems, certification, designation and marking

5.2.1 Product standard

The Malaysian Standards (MS) for scaffoldings are:


2. **MS 1462-2-1-2010**, Metal Scaffolding – Part 2: Tubular (Tube and coupler) scaffolds – Section 1: Specifications for steel tubes.


5.2.2 Types of scaffolding system

The MS 1462 series of standards covers three types of metal scaffolding systems:

i. Prefabricated scaffold (Steel Frame Scaffolding System)
ii. Tubular Scaffold (Tubes and Coupler/Fittings System)
iii. Prefabricated Scaffold (Modular Scaffolding System)

5.2.2.1 Prefabricated scaffold (Steel Frame Scaffolding System)

(1) The prefabricated steel frame scaffolding is covered under MS 1462-1: 2012. Figure 1a, 1b and 1c provide illustrative features of a typical setup and component of this scaffold.
NOTE 9: Attention is drawn to the fact that the drawings in Figure 1a, Figure 1b and Figure 1c are for the purpose of illustration only in this CIS. The shape shown here is a typical example of steel frame scaffolding (which are extracted from Figure 1, Figure 2 and Figure 3 of MS 1462-1:2012).
Figure 1b. Typical components of a steel frame scaffolding

Figure 1c. Typical fabricated steel frame scaffolding layout
2) The material quality dimensions and tolerance for the steel frame is as in Table 1 below.

<table>
<thead>
<tr>
<th>Component</th>
<th>Material quality</th>
<th>Dimensions (mm)</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical post and horizontal member</td>
<td>STC 500 specified in JS G3444 or equivalent</td>
<td>42.7</td>
<td>±0.3</td>
</tr>
<tr>
<td></td>
<td>STC 400 specified in JS G3444 or equivalent</td>
<td>27.2</td>
<td>±0.25</td>
</tr>
<tr>
<td></td>
<td>SS 310 specified in JS G3444 or equivalent</td>
<td>20.7</td>
<td>±0.2</td>
</tr>
<tr>
<td></td>
<td>SS 400 specified in JS G3444 or equivalent</td>
<td>20.7</td>
<td>±0.2</td>
</tr>
<tr>
<td>Cross brace</td>
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<td>7.5</td>
<td>±0.3</td>
</tr>
<tr>
<td></td>
<td>STC 400 specified in JS G3444 or equivalent</td>
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<td>SS 310 specified in JS G3444 or equivalent</td>
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<td></td>
<td>SS 400 specified in JS G3444 or equivalent</td>
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<td>Tubing member</td>
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<td>±0.3</td>
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<td>STC 400 specified in JS G3444 or equivalent</td>
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<td></td>
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<td>±0.1</td>
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<tr>
<td></td>
<td>SS 400 specified in JS G3444 or equivalent</td>
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<td>Trolley member</td>
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<td>±0.1</td>
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<td></td>
<td>SS 310 specified in JS G3444 or equivalent</td>
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<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
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<td>±0.1</td>
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<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td>Vertical &amp; diagonal members</td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
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<td></td>
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<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
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<td>Adjusting nut</td>
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<td></td>
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<td></td>
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<td>±0.1</td>
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<tr>
<td>Vertical &amp; diagonal members</td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td>Adjusting nut</td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td>Vertical &amp; diagonal members</td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td>Adjusting nut</td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td></td>
<td>SPC specified in JS G3101 or equivalent</td>
<td>30</td>
<td>±0.1</td>
</tr>
<tr>
<td>Member</td>
<td>Component</td>
<td>Material quality</td>
<td>Dimensions (mm)</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------------</td>
<td>---------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outer diameter</td>
</tr>
<tr>
<td>Joint pin</td>
<td>Tenon</td>
<td>SGP specified in JIS G3452 or equivalent</td>
<td>95†</td>
</tr>
<tr>
<td></td>
<td>Collar</td>
<td></td>
<td>25†</td>
</tr>
<tr>
<td>Arm lock</td>
<td></td>
<td>SS 330 specified in JIS G3101 or equivalent</td>
<td>38 (plate width)</td>
</tr>
<tr>
<td>Global bracing system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diagonal and horizontal brace</td>
<td>STK 500 specified in JIS G3444 or equivalent</td>
<td>48.6</td>
</tr>
<tr>
<td></td>
<td>Clamp or fitting</td>
<td>SPHD specified in JIS G 3131</td>
<td>42.7~48.6</td>
</tr>
<tr>
<td></td>
<td>Body and cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bolt, nut and pin</td>
<td>SS330 specified in JIS G 3101</td>
<td>12**</td>
</tr>
<tr>
<td>S&amp;O protection/Guard rail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tube member</td>
<td>STK 500 specified in JIS G3444 or equivalent</td>
<td>48.6</td>
</tr>
<tr>
<td></td>
<td>Clamp or fitting</td>
<td>SPHD specified in JIS G 3131</td>
<td>42.7~48.6</td>
</tr>
<tr>
<td></td>
<td>Body and cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bolt, nut and pin</td>
<td>SS330 specified in JIS G 3101</td>
<td>12**</td>
</tr>
<tr>
<td>Toe board</td>
<td>Board Member</td>
<td>lipped channel</td>
<td>150*</td>
</tr>
</tbody>
</table>

* Minimum width  
** Minimum diameter  
*** Minimum dimension  
† Minimum length
5.2.2.2  Tubular scaffold (Tubes and Coupler/Fittings System)

(1) A tubular scaffolding is assembled using steel tubes covered under MS 1462-2-1 or aluminium tubes covered under MS 1462-2-2. The tubular tubes are fixed together by couplers, fittings and accessories covered under MS 1462-2-3.

(2) Figure 2a and 2b provide illustrative features of a typical setup of a tubular scaffold and couplers for fixing the tubes together.

Figure 2a. Typical component and layout of tubular scaffolding

1. Standards
2. Sole-plates
3. Metal Base-plate
4. Ledgers
5. Transoms/Putlogs
6. Right Angle Coupler
7. Putlog Coupler
8. Joint Pin / Sleeve Coupler
9. Guardrail
10. Boarded Platform
11. Toe-board
12. Diagonal Bracing
13. Cross Bracing
14. Reveal Pin
(3) MS 1462-2-1 for steel tube and MS 1462-2-2 for aluminium tube covers tube size and thickness as follows.

Table 2a. Diameter, thickness and dimensional tolerance of tubes\textsuperscript{10}

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Steel</th>
<th>Aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>48.30mm</td>
<td>48.30mm</td>
</tr>
<tr>
<td>Tolerance</td>
<td>±0.5mm</td>
<td>±0.5mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Steel</th>
<th>Aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>3.2mm, 4.0mm</td>
<td>4.47mm</td>
</tr>
<tr>
<td>Tolerance</td>
<td>10%</td>
<td>±0.56mm</td>
</tr>
</tbody>
</table>

NOTE 10: The values in this table are for illustration purpose only in this CIS, which are extracted from clause 7.5 of MS 1462-2-1: 2010 (for Steel) and Table 1 MS 1462-2-2:2010 (for Aluminium).

5.2.2.3 Prefabricated scaffold (Modular Scaffolding System)

(1) A modular scaffolding system shall be designed according to MS 1462-3-1, MS 1462-3-2 and MS 1462-4-1.

(2) The material is either steel or aluminium of outside diameter of 48.3 mm\textsuperscript{11} with thickness and dimensional tolerance of tubes as given in Table 3.
Table 3. Wall thickness and dimensional for tubes with an outside diameter of 48.3mm

<table>
<thead>
<tr>
<th>Steel</th>
<th>Nominal wall thickness</th>
<th>Minus tolerance of the wall thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(2.7 \leq t &lt; 2.9)</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>(t \geq 2.9)</td>
<td>in accordance with EN 10219-2</td>
</tr>
<tr>
<td>Aluminium</td>
<td>(3.2 \leq t &lt; 3.6)</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>(36 \leq t &lt; 4.0)</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>(t \geq 4.0)</td>
<td>in accordance with EN 755-8</td>
</tr>
</tbody>
</table>

NOTE 11: For tubes with other diameters, see clause 4.2.1.3 MS 1462-4-1:2011 (EN 12811-1:2003)
NOTE 12: The values in this table are for illustration purpose only in this CIS, which are extracted from Table 2 and Table 3 of MS 1462-3-1:2011.

(3) The modular scaffolding is specified with the width class and headroom classes as given in Table 4 and Table 5.

Table 4. Width classes for working areas

<table>
<thead>
<tr>
<th>Width class</th>
<th>W in m</th>
</tr>
</thead>
<tbody>
<tr>
<td>W06</td>
<td>0.6 ≤ w &lt; 0.9</td>
</tr>
<tr>
<td>W09</td>
<td>0.9 ≤ w &lt; 1.2</td>
</tr>
<tr>
<td>W12</td>
<td>1.2 ≤ w &lt; 1.5</td>
</tr>
<tr>
<td>W15</td>
<td>1.5 ≤ w &lt; 1.8</td>
</tr>
<tr>
<td>W18</td>
<td>1.8 ≤ w &lt; 2.1</td>
</tr>
<tr>
<td>W21</td>
<td>2.16 ≤ w &lt; 2.4</td>
</tr>
<tr>
<td>W24</td>
<td>2.4 ≤ w</td>
</tr>
</tbody>
</table>

NOTE 13: The values in this table are for illustration purpose only in this CIS, which are extracted from Table 1 of MS 1462-4-1:2013

Table 5. Headroom classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Clear headroom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between working areas (h_3)</td>
</tr>
<tr>
<td>(H_1)</td>
<td>(h_3 \geq 1.90 \text{ m})</td>
</tr>
<tr>
<td>(H_2)</td>
<td>(h_2 \geq 1.90 \text{ m})</td>
</tr>
</tbody>
</table>

NOTE 14: The values in this table are for illustration purpose only in this CIS, which are extracted from Table 1 of MS 1462-4-1:2013
2) Figure 3 illustrates the requirements for headroom and width of working areas.

Figure 3. Requirements for headroom and width of working areas
(for illustration purpose only for modular scaffolding)

Key
b = free walking space, which shall be at least the greater of 500 mm and (c - 250 mm)
c = clear distance between standards
$h_{1a}$, $h_{1b}$ = clear headroom between working areas and transoms or tie members respectively
$h_2$ = clear shoulder height
$h_3$ = clear head height between working areas
p = clear head height width, which shall be at least the greater of 300 mm and (c - 450 mm)
w = width of the working area in accordance with clause 5.2 (MS 1462-4 -1:2013)
Figure 4. Example of typical components of scaffolding system

Key

- $h$: Scaffold height
- $b_e$: Scaffold bay width, centre to centre of standards
- $l_e$: Scaffold bay length, centre to centre of standards
- $h$: Scaffold lift height
- 1: Bracing in vertical plane (transverse diagonal) (3.6)
- 2: Bracing in horizontal plane (3.5)
- 3: Side protection (3.19)
- 4: Bracket brace (-)
- 5: Node (3.13)
- 6: Bracing in vertical plane (longitudinal diagonal) (3.6)
- 7: Standard (3.21)
- 8: Transom (3.24)
- 9: Ledger (3.10)
- 10: Coupler(3.8)
- 11: Tie member (3.23)
- 12: Platform (3.15)
- 13: Bracket (-)
- 14: Bridging ledger (-)
- 15: Base plate (3.3)
- 16: Platform unit (3.16)
- 17: Horizontal frame (-)
- 18: Anchorage (3.1)
- 19: Vertical frame (-)
- 20: Fencing structure (5.5.5)
- 21: Principal guardrail (5.5.2)
- 22: Intermediate guardrail (5.5.3)
- 23: Toeboard (5.5.4)
- 24: Post (-)
- 25: Base jack (3.2)

NOTE 15: The above figure taken from Figure 1 MS 1462-4-1:2013 is for illustration purposes only in this CIS. The numbers in ( ) refers to clauses in MS 1462-4-1:2013.
5.2.2.4 Steel frame scaffold system\textsuperscript{16}

For steel frame scaffold system, the load test on the components of frame scaffolding system shall comply with clause 6 of MS 1462-1.

5.2.2.5 Modular scaffold system\textsuperscript{16}

For modular scaffold system, the load test on the components of the modular scaffold system shall comply with MS 1462-3-2.

5.2.2.6 Tubular scaffold system\textsuperscript{16}

For tubular scaffold system, the testing on the component of the tubular scaffold system shall comply with MS 1462-2-1, MS 1462-2-2 and MS 1462-2-3.

NOTE 16: For product certification, the requirements of the product standards as in 5.2.1 shall apply.

5.2.2.7 Access between levels

Safe means of access staircase shall be provided in the scaffold system and shall be secured against unintentional loosening and shall have a slip resistant surface and shall comply with MS 1462-4-1.

5.2.3 Product certification

The manufacturer, supplier, contractor or owner of scaffolding shall be responsible for the compliance of product and system to the relevant MS 1462 standards.

(1) The manufacturer, supplier, contractor or owner shall make arrangements with an independent third-party certification body, which is recognised by CIDB for product certification to this CIS.

(2) The certification shall be based on appropriate product standards for a scaffold system (reference clause 5.2.2) as declared by the manufacturer, which shall consists of:

   a) a set of interconnecting complete components of the scaffold system;
   b) the assessed standard set of system configurations; and
   c) the product manual\textsuperscript{17}

NOTE 17: Guidance for the product manual and instruction are provided in MS 1462-3-1 and MS 1462-4-1.
(3) Metal tubes, couplers and fittings (refer to relevant MS 1462) to be used in a scaffolding system may be certified separately for compliance to their appropriate product standards\textsuperscript{18}.

NOTE 18: A separate certification and approval for these materials to their product standard is required when produced separately by a manufacturer, which is different from the scaffolding manufacturer.

(4) A certificate issued by the certification body shall contain at least the following information:

   a) Name and address of the manufacturer
   b) Type of scaffolding system (where applicable)

   Other relevant information may be included, subject to mutual agreement between the certificate holder and the certification body.

5.2.4 Product marking

The manufacturer or supplier shall be responsible for the product marking.

Each scaffolding component and its accessory shall be legibly marked on the body (either embossed or waterproof sticker) with the following information:

1. The manufacturer’s or supplier’s name (embossed on body or fixed metal plate)
2. MS No (for appropriate scaffolding system)
3. Year of manufacture\textsuperscript{19}
4. CIDB PPS number
5. CB marks (only applicable for product certification)

NOTE 19: For product manufactured before 01.01.2017 or before the date of enforcement of this CIS, whichever is earlier, and where the actual date is not available, the date should be marked as “before 2017”.

Marking shall be so arranged that it will remain legible\textsuperscript{20} for the life of the component. The size of the lettering may take into account the size of the component.

NOTE 20: Any components and accessories at a construction site with illegible markings shall not be used and removed from site
For small items, where it is not practical to mark even with a sticker on the component and already approved by CIDB, these items may be used and subjected to inspection by contractor’s designated person and approval by PETW.

5.3 Planning, product approval, design and submission for construction of scaffolding

The flowchart in Appendix B provides informative guidance on steps that should be considered by contractor for compliance with the regulatory requirement of the CIDB Act 520 (Amendment 2011) and Factories and Machinery Act 1967 (BOWEC) in the construction of a scaffolding.

5.3.1. Planning for temporary work and HIRARC

(1) A contractor shall be equipped with proper planning and conduct HIRARC\textsuperscript{21} to ensure safety in the use of scaffolding. The risk level\textsuperscript{22} of scaffolding activities should be established and appropriate action should be taken.

NOTE 21: MBAM has published a “Handbook For Hazard Identification, Risk Analysis & Risk Control”. The Handbook has, among others, identified hazards related to work activities for erection and dismantling scaffolding.

NOTE 22: The Handbook in Note 21 has three risk levels.

HIGH: A HIGH risk requires immediate action to control the hazard as detailed in the hierarchy of control, Actions taken must be documented on the risk assessment form including date of completion.

MEDIUM: A MEDIUM risk requires a planned approach to controlling the hazard and applies temporary measure if required. Any action taken must be documented on the risk assessment form, including date of completion.

LOW: A risk identified as LOW may be considered as acceptable and further reduction may not be necessary. However, if the risk can be resolved quickly and efficiently, control measures should be implemented and recorded.

(2) For appropriate Class of a Temporary Works, a contractor shall engage a PETW\textsuperscript{23} to deal with the design (which includes analysis and design calculation, specification and working drawing), endorsement and supervision of the scaffolding.

NOTE 23:
\begin{itemize}
\item[a)] The Professional Engineers with Practicing Certificates (see 4.1 (14).
\item[b)] The BEM Guidelines No.:001, has established “Guidelines On The Role And Responsibility Of Professional Engineers”.
\end{itemize}
5.3.2 CIDB approval for product

The contractor shall only use scaffolding system and material that conform to the appropriate MS 1462 series of Malaysian Standard, and have been approved in the form of ‘Perakuan Pematuhan Standard’ (PPS)\(^{24}\) issued by CIDB.

NOTE 24: Please refer to Note 7 in clause 5.1.1.

5.3.3 Design and submission

The structural analysis, design calculation, specifications and drawings of a scaffolding system shall be performed and endorsed by a PETW.

Where design is applicable and required under Class 2, Class 3 Temporary Works or BOWEC\(^{25}\), it shall be designed, endorsed and supervised by a PETW.

Where required under BOWEC, submission to DOSH shall be the responsibility of the contractor.

NOTE 25: BOWEC
"Regulation 75. Design and Drawings of Scaffolds to be approved.

(1) Every metal tube scaffold exceeding 40 m in height and every other scaffold exceeding 15 m in height shall be constructed in accordance with the design and drawings of a Professional Engineer. All other metal tube scaffolds shall have their designs and drawings approved by the Chief Inspector.
(2) A copy of the design and drawings of the structure shall be submitted to the Chief Inspector for his record prior to the erection of the structure.
(3) A copy of the design drawings certified by the Professional Engineer shall be made available at the worksite for inspection by an Inspector."

5.4 Material selection, quality check, erection, maintenance, alterations, dismantling, storage and care

In general, scaffolding material and system are likely to be used repeatedly in its life cycle - from its first usage until it is discarded. The flowchart in Appendix C illustrates a possible process flowchart of a scaffolding from receiving and selection of material, quality check, erection, maintenance, dismantling, storage and care.

5.4.1 Material selection

All scaffolding components and materials received at a construction site shall be visually inspected for damages and proper markings by the contractor's designated person.
Damaged or not marked component shall be rejected and shall be removed from the construction site. The results of inspection shall be recorded in the receiving inspection form (Appendix D).

5.4.2 Quality check

There are two types of checks, which are routine site quality check and periodic site quality check.

5.4.2.1 Routine site quality check (RSQC)

(1) Testing for RSQC, applicable only to used and refurbished materials, shall be carried out on the scaffolding components at the construction site. The selection of sample shall be conducted by PETW\(^{26}\) on a random basis at any time during construction. The sample size, frequency and testing shall comply with the requirement in Table 6a.

<table>
<thead>
<tr>
<th>Testing</th>
<th>Type of Scaffolding</th>
<th>No. of Sample and Frequency of Testing</th>
<th>Sampling Place</th>
<th>Sampling By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Test on Component</td>
<td>Steel Frame</td>
<td>1 sample for each component for every 30,000 pieces or less of each component</td>
<td>Construction site</td>
<td>PETW</td>
</tr>
<tr>
<td>See clause 5.4.2.4</td>
<td>Tubular</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual &amp; Dimensional</td>
<td>Modular(^{27})</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE 26: For projects classified under Temporary Works Class 2 or class 3 and uses less than 1,000 pieces of components, the PETW responsible for the project can give a waiver on test for Quality Check. An example of such situation is a renovation of one house or construction of a bungalow or a house less than three storey.

NOTE 27: For modular scaffolding, the components that are specified in the code of practice and standards shall be tested accordingly. The components that are not listed for testing in the code of practice or standards, the manufacturer shall specify the components to be tested, as declared in the manufacturer’s specification and system configuration.
(2) The test report shall be submitted by the contractor to PETW, who shall review the test results. All tested component shall comply with the requirements in the product standards before the scaffolding is allowed to be erected at the construction site.

(3) If the sample fails the RSQC, a second test shall be carried out on a new sample randomly selected by PETW. Should the second test fail too, the batch of scaffolding at the construction site shall be removed by the contractor from the construction site.

5.4.2.2 Periodic site quality check (PSQC)

A PSQC should be conducted for the purpose to ensure all scaffolding at site comply with the set standard. The sample size, frequency and testing shall comply with the requirement in Table 6b.

<table>
<thead>
<tr>
<th>Testing</th>
<th>Scaffolding Type</th>
<th>No. of sample and Frequency of testing</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Test on Component See clause 5.4.2.4 Visual &amp; Dimensional</td>
<td>Steel Frame Tubular Modular</td>
<td>1 sample for each component for every 60,000 pieces or less-of each component every twelve (12) months</td>
<td>Construction site PETW</td>
</tr>
</tbody>
</table>

5.4.2.3 All testing in Table 6a and 6b shall follow the applicable testing requirements and method prescribed in the scaffolding system and materials product standards respectively, unless specified otherwise in this CIS.

5.4.2.4 Component testing shall follow the testing requirements of MS 1462 and shall be tested by laboratories accredited under SAMM or laboratories recognised by CIDB.

5.4.2.5 The requirements of (2) and (3) clause 5.4.2.1 apply for both random RSQC and periodic PSQC tests.
5.4.3 Erection, maintenance, alterations, dismantling, storage and care

(1) The erection\(^{27}\), alteration\(^{27}\) and maintenance\(^{28}\) of scaffolding shall be performed by qualified/competent\(^{29}\) scaffolders under a direct supervision of a competent designated person, engaged by the contractor.

(2) The scaffold shall be inspected\(^{30}\) by a competent designated person, engaged by the contractor and the inspection record (Appendix E) shall be maintained. While the scaffold is properly tagged with Green Tags (Appendix F) or Red Tags (Appendix G).

(3) The dismantling\(^{27}\), shall be performed by qualified/competent scaffolders under a direct supervision of a competent designated person, engaged by the contractor. Contractor or scaffold owner should provide good storage and care for the dismantled components\(^{31}\).

NOTE 27: BOWEC
“Regulation 74. Supervision of Work and Inspection of Material.

(1) No scaffold shall be erected or be substantially altered or be dismantled except under the direct supervision of a designated person.
(2) All materials to be used for the construction of scaffolds shall be inspected by a designated person on each occasion before being used.”

NOTE 28: BOWEC
“Regulation 73. Maintenance.

(1) Every scaffold shall be properly maintained and every part thereof shall be kept so fixed, secured or placed in position as to prevent, as far as is practicable, accidental displacement.
(2) No scaffold or part thereof shall be partly dismantled and allowed to remain in such a condition that it is capable of being used unless either-
(a) the scaffold continues to comply with these Regulations; or
(b) a prominent warning notice in the national language indicating that the scaffold or part thereof is not to be used, is affixed near any point at which the scaffold or part, as the case may be, is liable to be approached for the purpose of use.”

NOTE 29:
(a) Competence can be described as the combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform task safely.
(b) Competent persons someone who has attended and passed the course and obtained a scaffold competency certificate from a recognised training centre by DOSH.
NOTE 30: BOWEC
“Regulation 85. Inspection of Scaffolds.

(1) Subject to the provision of these Regulations, no scaffold shall be used unless:
(a) it has been inspected by a designated person within the preceding seven days; and
(b) it has been inspected by a designated person since its exposure to weather conditions is likely to have affected its strength or stability or to have displaced any part; and
(c) the results of such inspection are entered by the designated person into a register which is to be kept at the worksite for inspection by an Inspector.

(2) The provisions of paragraph (a) of sub-regulation (1) of this regulation shall not apply to a scaffold where no part of which has been erected of more than seven days, and a trestle scaffold or a scaffold from no part of which a person is liable to fall more than 3 metres.”

NOTE 31: Storage and Care For Scaffolding After Dismantling
The contractor or the scaffold owner should provide a proper place for storage and care to ensure the scaffold continues to comply with product standards after dismantling or not in use and should have a proper instruction for maintenance and repair of components. Any component that are badly corroded or damaged that could not be refurbished should be discarded and removed from the site.
Appendix A  
(Informative)

QPASS: How to apply for product approval from CIDB

QPASS is an acronym for Quality Product in Accordance to Specified Standards. It is a CIDB program to ensure products comply with standards specified in the Fourth Schedule of CIDB ACT 520 (Amendment 2011).

For further details, interested reader should refer to the documents below (Figure A1 and Figure A2), which are available on the CIDB website (www.cidb.gov.my).

"PRAKATA

Figure A1. CIDB Guide Book on procedure to obtain PPS for local product

PROCEDURE ON STANDARD COMPLIANCE CERTIFICATION  
(IMPORTED CONSTRUCTION PRODUCTS)

FOREWORD
This handbook is published as a guide for importers, agents and forwarding agents on importing products under the Act 520 (Amendment 2011) and Customs (Prohibitions of Imports) Order 1998 (Amendment 2012). The content of this handbook provides a guide on the procedures of importing construction products into Malaysia. All imported construction products are required to undergo a compliance process according to the requirements of Malaysian Standards (MS) before it can be distributed in the local market. A list of reasons for non-compliance that often occurs, which results in the construction products being rejected at the customs gates, is also listed.

This publication aims for relevant parties to avoid unnecessary waste of time, cost and energy. Thus, it is hoped that this handbook will act as a useful reference for importers, agents and forwarding agents to increase the efficiency in importing construction products, as in the Act 520 (Amendment 2011) and Customs Order (Prohibitions of Imports) 1998 (Amendment 2012).

Figure A2. CIDB Guide Book on procedure for importing construction product
Appendix B
(normative)

Process A: Flowchart For Design And Drawing Approval For Construction of Scaffolding.

(1) Contractor shall plan for Temporary Work & HIRARC Contractor should engage PETW

(2) Is scaffolding product approved by CIDB?

Yes

(3) Class of Temporary Work

Class 1

Class 2, Class 3 & BOWEC

(4) Engagement of PETW by contractor is compulsory. Scaffolding design endorsed by PETW

No

(5) Require DOSH approval?

Yes

(6) Contractor submit to DOSH (design shall be endorsed by PETW)

No

(7) Approve by DOSH

Yes

(8) Contractor shall submit a copy of PETW endorsed design to DOSH for DOSH record (Except for Class 1)

(9) Proceed for erection of scaffolding. Go to Process B

(10) Any alteration or change in use?

Yes

No

End of Process A

NOTE a): Design includes analysis and design calculation, specification and working drawing. The PETW engaged by a contractor shall carry out the design, endorsement and supervision of the scaffolding.
Appendix C
(normative)

Process B: Flowchart For Receiving & Selection of Material, Quality Check, Erection, Alteration, Maintenance Dismantling, Storage & Care of Scaffolding.

1. PETW design and endorsement of the scaffolding is compulsory and the design calculations and drawings shall be made available at construction site

2. Receiving and recording of scaffolding components by contractor's designated person (Appendix D)

3. Visual inspection (designated person)

   - Not Damaged
   - Damaged

4. Acceptance of components for scaffolding erection by designated person (Appendix D)

5. Random sampling of components by PETW for quality check according to clause 5.4.2.1 (RSQC) & clause 5.4.2.2 (PSQC) (This can be repeated during the construction)

6. Results of quality check

   - Comply
   - Not Comply

7. Erection, Maintenance & Alteration
   (Under direct supervision by the designated person) (Appendix E, F & G)

8. Dismantling
   (Under direct supervision by the designated person)

9. Storage & Care (Full responsibility of contractor or scaffold owner)

10. Condition of components

11. Discard (Full responsibility of contractor or scaffold owner)

   - Not Damaged
   - Badly corroded, damaged and cannot be repaired

End

Note: Process (9), (10) & (11) are not under the scope of this CIS. They are included in the Flowchart to remind the contractor or scaffold owner for a good practice and to ensure good care for the scaffold in anticipation of its repeated use.
This form is a typical example of a checklist form. It shall have at least the information as shown in the example.

### SCAFFOLD RECEIVING INSPECTION CHECKLIST FORM

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantity (pieces)</th>
<th>Acceptability Checking</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Accepted</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not Accepted</td>
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</tbody>
</table>

Total

Checked by Designated Person:  
Name:
Designation:
Date:

Approved by PETW:  
Signature:
Name:
BEM Registration Stamp:
Date:
### Scaffolding Erection/Alteration Inspection Checklist

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Yes</th>
<th>No</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PETW ENDORSED DRAWINGS AND CALCULATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Scaffolding erected as per PETW endorsed drawings</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>FOUNDATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Scaffolding erected on firm ground</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>b) Ground properly compacted</td>
<td></td>
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<tr>
<td></td>
<td>c) Scaffolding not endangered by open excavation</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>SOLE PLATES</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a) Proper sole plates used</td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>BASE PLATES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Base plates are fitted to all standards</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>ALIGNMENT OF SCAFFOLD</td>
<td></td>
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<tr>
<td></td>
<td>a) Standards or frames vertical</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>b) Ledgers and transoms levelled</td>
<td></td>
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<tr>
<td>6</td>
<td>SCAFFOLDING COMPONENT CONNECTION</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>a) Connections are tightened and secured</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>BRACING</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>a) Braces are tightened and secured</td>
<td></td>
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<tr>
<td>8</td>
<td>WALL TIE</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a) Wall tie placed in position as per drawing.</td>
<td></td>
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</tr>
<tr>
<td>9</td>
<td>WORKING PLATFORM</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a) Working platforms are secured or locked</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>LADDER/STAIR</td>
<td></td>
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<tr>
<td></td>
<td>a) Ladders/stairs are securely attached to the scaffold</td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>GUARD-RAIL</td>
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</tr>
<tr>
<td></td>
<td>a) Guard-rails are fixed and secured</td>
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<td></td>
</tr>
</tbody>
</table>

**NOTE 32:** PETW means Professional Engineer with Practising Certificate employed by contractor to carry out design, endorsement and supervision of temporary works. (see clause 4.1 (14) CIS 22.).

**General comments:**

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**Inspected by Designated Person:**

**Approved by PETW:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOSH Registration No.</td>
<td>BEM Registration Stamp</td>
</tr>
<tr>
<td>Date</td>
<td>Date</td>
</tr>
</tbody>
</table>
Appendix F  
(Normative)  
Green Tagging33 - Scaffolding Installation & Maintenance

Figure F1. Front page of the green tag  
Figure F2. Back page of the green tag

Note 33: Typical Green Tag - It shall contain minimum information, as shown in the example above. The contractor or owner shall be responsible for the design, use and maintenance of the Green Tag. The designed Green Tag shall enable it to be securely installed on the scaffold, clearly visible and contains language that could be understood by users of the scaffold.

Note 34: Where necessary, the Green Tag may contain other information appropriated to type and use of the scaffolding.
Figure G1. Typical Red Tag to prevent use of uncompleted scaffolding
ACKNOWLEDGEMENT

Deepest appreciation is expressed to the committee members, who have spent time and effort in developing CIS 22 for the betterment of the construction industry. They are:

Ir. Tan Yean Chin (Chairman)  
Pn. Habsah bt Md Ishak

Ir. Dr. Hj. Mukhtar bin Che Ali

En. Sazali bin Che Amat

Dr. Maziah Mohammad  
Dato' Ir. Jamaludin bin Non
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En. Ahmad Hazim bin Abdul Rahim /
En. Muhammed Asraff Abdul Rahman
Ir. Wong Woo Min

Prof. Madya Dr. Rosli Mohamad Zin  
En. Michael Yap Kok Wai  
Puan Suraya bt Johari /
En. Daniel Lim Boon Aik
Prof. Dato' Ir. Dr. Mahyuddin Ramli  
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Cik Marshidah bt Mustapa  
Tuan Hj. Yahya bin Hj. Ariffin, G.Eng.  
(CIDB rapporteur)
Puan Nor Hamiza bt Zahar (secretariat)

En. Zulkefli bin Ismail (secretariat)