



# **Abu Dhabi EHSMS Regulatory Framework (AD EHSMS RF)**

**EHS Regulatory Instrument**

**Code of Practice**

**EHS RI - CoP 26.0 – Scaffolding**

**Version 2.0**

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## ACKNOWLEDGEMENTS

With gratitude Abu Dhabi EHS Center acknowledges the great support provided by the Executive Council in facilitating the issuance of Abu Dhabi Emirate Environment, Health and Safety Management System (AD EHSMS) and its implementation at Emirate level.

The issuance of the system would not have been possible without the supervision, diligent efforts and productive recommendations of the AD EHS Center Board of Directors.

These documents (Regulatory Instruments) constitute the efforts of the Abu Dhabi EHS Center and the concerned Sector Regulatory Authorities who worked together to integrate all relevant regulatory requirements under *AD EHSMS RF*. The input, contribution and constructive views of all sectors is highly appreciated.

May these documents prove to be beneficial and helpful in system implementation and in expanding the knowledge in the EHS field.



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## Preface

This Abu Dhabi EHS Regulatory Instrument was developed by the Building and Construction Sector Regulatory Authority as the primary Competent Authority for this topic to set the minimum mandatory requirements.

Every effort was made in developing this document so that it does not conflict with existing local or federal laws and regulations. In case of conflict, requirements of the existing local and federal laws and regulations shall prevail, and all concerned are obliged to bring the same to the attention of AD EHS Center for resolution.

This AD EHS Regulatory Instrument has been developed, reviewed and approved, following the process as described in *AD EHSMS Implementation Guideline: The Integration of EHS Requirements in the Emirate of Abu Dhabi*, by the following stakeholders:

- Abu Dhabi EHS Higher Committee;
- Abu Dhabi EHS Center;
- Environment Agency Abu Dhabi;
- Department of Municipal Affairs;
  - Abu Dhabi City Municipality;
  - Al Ain City Municipality;
  - Western Region Municipality;
- Department of Transport – Abu Dhabi;
- Abu Dhabi Water and Electricity Authority;
- Health Authority - Abu Dhabi;
- Higher Corporation for Specialized Economic Zones (ZonesCorp);
- Center for Waste Management – Abu Dhabi;
- Abu Dhabi Tourism Authority;
- Abu Dhabi Food Control Authority;
- Abu Dhabi Education Council;
- Regulation and Supervision Bureau; and
- Other Relevant Federal and Local Competent Authorities.

The AD EHSMS consists of the following hierarchy of documents:

- AD EHSMS RF Elements - Mandatory System Requirements

EHS Regulatory Instruments:

- Standards and Guideline Values - Mandatory EHS threshold and exposure levels
- Codes of Practice - Mandatory EHS technical requirements – subject specific
- Mechanisms - Mandatory system implementation processes and procedures

Guidelines:

- Technical Guidelines - Non-mandatory guidance on how to implement an EHS Regulatory Instrument
- AD EHSMS Guidance Documents - Non-mandatory guidance and interpretation of an *AD EHSMS RF* concept and/or principle

Further, this document is not intended to conflict with any contractual obligations in effect at the time of its issuance. However, all future contracts shall adhere to applicable requirements stated herein, and existing long term contracts shall be brought into compliance with its requirements as soon as reasonably practicable as stipulated by relevant subject authorities.

This document will be reviewed periodically as part of the continual improvement cycle.

## 1. Introduction

- (a) This Code of Practice (CoP) applies to all employers within the Emirate of Abu Dhabi. This CoP is designed to incorporate requirements set by Abu Dhabi EHS Center and Sector Regulatory Authorities in the Emirate of Abu Dhabi.
- (b) This CoP establishes the requirements and standards so that the risks associated with the use of scaffolding are assessed, that control measures are implemented in accordance with the hierarchy of controls and those control measures are taken to prevent injury, illness and disease to persons who might be exposed to risks arising from those activities.
- (c) This CoP applies to the planning, assessment and control measures to the erection, use, maintenance, alteration and dismantling of scaffolding, inspection and maintenance of scaffolds.
- (d) This CoP refers to all platforms, irrespective of height, which are assembled from scaffold components in all or part. This includes all modular scaffolding, all tube and coupler scaffolding, all suspended scaffolding, all swinging stages and all planks placed across structures not engineered to accept planks.
- (e) The general term “Scaffolding” refers to a temporary structure on the inside or outside of a building or structure, made of wooden / metal planks and metal poles, used by employees during building, repairing, or cleaning works.
- (f) This definition excludes trestles, fabricated working platforms, including work boxes and all motorised platforms.

## 2. Training and Competency

- (a) Employers shall ensure that EHS training complies with the requirements of:
  - (i) *AD EHSMS RF – Element 05 – Training and Competency;*
  - (ii) *AD EHS RI – Mechanism 7.0 – AD EHS Professional Entity Registration;* and
  - (iii) *AD EHS RI – Mechanism 8.0 – AD EHS Practitioner Registration.*
- (b) In accordance with *AD EHSMS RF – Element 01 – Roles, Responsibilities and Self-Regulation* Section 3.2.5 employers shall ensure employees required to implement the requirements of this CoP are trained in the use of scaffolding and understand the risks associated with using scaffolds and the control measures implemented by the employer.
- (c) Anyone who works with scaffolds requires the relevant scaffolding competencies. These can be demonstrated in the form of a qualification, certificate, permit, training, or proven experience.
- (d) The following roles require the stated competencies:
  - (i) scaffold designers - appropriate engineering qualifications and experience;
  - (ii) personnel erecting, modifying or dismantling a scaffold over 10 meters high and all suspended scaffolds - Scaffolding Competency Certificate issued by approved third party training provider, as per *AD EHS RI – Mechanism 8.0 – AD EHS Practitioner Registration;* and

- (iii) personnel erecting, modifying or dismantling a scaffold below 10 meters high - Scaffolding Competency Certificate issued by an registered trainer, as per *AD EHS RI – Mechanism 8.0 – AD EHS Practitioner Registration* . Employers who deliver training internally for scaffold erection shall ensure that the main elements, as covered by the scaffold competency certificate in section 2 (c) (ii) are included within their internal training program.
- (e) The employer shall provide general training to all persons who work with or use scaffolding as part of their role, including loading requirements and restrictions, inspection requirements and defects, and common hazards.
- (f) Employers shall maintain a record of the required training that contains the following information:
  - (i) name and ID number;
  - (ii) Emirates ID number of the employee;
  - (iii) subject(s) of training;
  - (iv) training provider;
  - (v) dates(s) of training; and
  - (vi) person(s) providing the training.

### **3. Requirements**

#### **3.1 Roles and Responsibilities**

##### **3.1.1 Employers**

- (a) Employers shall undertake their roles and responsibilities in accordance with the general requirements of *AD EHSMS RF – Element 01 – Roles, Responsibilities and Self-Regulation Section 3.2.5*.
- (b) Employers shall undertake their specific roles and responsibilities in accordance with the following:
  - (i) where work cannot be safely done from the ground or from part of a building or other permanent structure, there shall be provided, placed and kept in position for use, appropriately maintained scaffolds;
  - (ii) whichever method is chosen, it shall be appropriate for the purpose;
  - (iii) all scaffolding work is appropriately planned, and supervised;
  - (iv) those involved in scaffolding are trained and competent;
  - (v) the place where scaffolding work is undertaken is safe;
  - (vi) scaffolding equipment is appropriately inspected by a competent person; and
  - (vii) where an employer is to use scaffold erected by another employer it shall ensure that the scaffold is inspected by competent person and declared safe and appropriate for use.

### 3.1.2 Principal Contractors

- (a) In the case of the Building and Construction Sector, Principal Contractors shall undertake their roles and responsibilities in accordance with the general requirements of *EHS RI – CoP 53.0 – EHS Management During “Construction Work”*.
- (b) Principal Contractors shall undertake their specific roles and responsibilities in accordance with the following:
  - (i) ensure the employers have all available descriptions of the site, including design drawings, site surveys, plans of services and information on the nature and location of hazardous materials, the nature of building materials and the building or structure’s relationship to surrounding properties;
  - (ii) all relevant authorities and utility service providers are notified and all necessary approvals are obtained before work commences;
  - (iii) control access to scaffolding through the use of awareness, signage and access restrictions;
  - (iv) ensure that employees erect and inspect scaffolding are qualified and competent; and
  - (v) provide coordination between employers using and working from the same scaffold.

### 3.1.3 Employees

- (a) Employees shall undertake their roles and responsibilities in accordance with the general requirements of *AD EHSMS RF – Element 01 – Roles, Responsibilities and Self-Regulation Section 3.2.7*.
- (b) Employees shall undertake their specific roles and responsibilities in accordance with the following:
  - (i) following information provided by the employer regarding scaffold use;
  - (ii) observing safe work practices whilst using scaffolding and following operating procedures prescribed by the employer, including the observation of warning signs; and
  - (iii) use PPE in accordance with employer’s instructions when using scaffolding.

## 3.2 Planning and Assessment

### 3.2.1 General Requirements

- (a) Employers shall ensure the following:
  - (i) an assessment of the various risks is undertaken and systems of work are established which are safe to all parties involved or affected including the public;
  - (ii) that effective procedures and control measures are in place, which are implemented in order to manage activities safely and without risk to health;
  - (iii) that for the Building and Construction Sector the management of scaffolding requirements are included in the Pre-Tender Environment, Health and Safety Plan in accordance with *AD EHS RI – CoP 53.0 – EHS Management During “Construction Work”*; and

- (iv) that associated safe systems of work, and site rules are included in the Environment, Health and Safety Construction Management Plan (EHS-CMP) in the case of the Building and Construction Sector in accordance with *AD EHS RI – CoP 53.0 – EHS Management During “Construction Work”*.

### 3.2.2 Risk Assessment

- (a) Employers shall ensure prior to the construction of any scaffolding that a risk assessment is undertaken and that appropriate control measures are identified in accordance to *AD EHSMS RF – Element 02 – Risk Management* and *AD EHS RI – CoP 23.0 – Working at Height*.
- (b) The risk assessment shall consider, but is not limited to, the following issues:
  - (i) engaging in the erection, modification or dismantling of a scaffold or access equipment;
  - (ii) using a scaffold or associated equipment;
  - (iii) being in the vicinity of elevated work, scaffold or equipment;
  - (iv) working at heights/falling objects;
  - (v) overhead electrical services;
  - (vi) corrosive substances;
  - (vii) movement of cranes, vehicles and machinery;
  - (viii) weak or unstable supporting structures and surfaces; and
  - (ix) high winds and storms.
- (c) Where hazards cannot be eliminated they shall be controlled by:
  - (i) selecting a less hazardous form of scaffolding or access system;
  - (ii) modifying the design of the scaffold or access systems;
  - (iii) isolating the scaffold; and
  - (iv) as a last resort providing a harness and fall arrest system (unless specifically not permitted by manufacturer’s instructions).

### 3.2.3 Design Drawings

- (a) Employers shall ensure a design drawing is prepared by a competent engineer for scaffolds over 10 meters in height or which include the use of:
  - (i) ladder beams;
  - (ii) mesh or shade cloth;
  - (iii) freestanding scaffolds;
  - (iv) suspended scaffolds; and
  - (v) non-standard ties or bracing.
- (b) Employers shall ensure all scaffolds above 10 meters are erected, altered, used and dismantled in accordance with the design drawing or manufacturer’s instructions where applicable.

- (c) Where a design drawing by an engineer is not required (eg. scaffolds below 10 meters):
- (i) persons erecting the scaffold shall be competent and trained in the basic design and erection of the particular type of scaffold; and
  - (ii) the scaffold manufacturer's instructions or drawings shall be followed and be available on site.

### 3.3 Design of Scaffolding

#### 3.3.1 Designers Roles and Responsibilities

- (a) Designers shall undertake their roles and responsibilities in accordance with the general requirements of *AD EHSMS RF – Element 01 – Roles, Responsibilities and Self-Regulation Section 3.2.9* and *EHS RI – CoP 20.0 – Safety in Design*.

#### 3.3.2 Principles of Design

- (a) The design of the scaffold shall take into account:
- (i) the strength, stability and rigidity of the scaffold and supporting structure;
  - (ii) the intended use and application of the scaffold;
  - (iii) the safety of persons engaged in the erection, alteration and dismantling of the scaffold;
  - (iv) the safety of persons using the scaffold;
  - (v) scaffold materials; and
  - (vi) the safety of persons in the vicinity of the scaffold.

#### 3.3.3 Foundations

- (a) The design of the scaffold shall take into account:
- (i) the scaffolding foundations shall be able to carry and distribute all the weight of the scaffold, including any extra loads placed on the scaffold, which may also include perimeter containment screens.

#### 3.3.4 Ground Conditions

- (a) The design of the scaffold shall take into account:
- (i) water and nearby excavations that may lead to soil subsidence and the collapse of scaffold; and
  - (ii) any reasonably foreseeable watercourse, such as a recently filled trench, which has the potential to create a wash out under the scaffold base, shall be diverted away from the scaffold.

#### 3.3.5 Loadings

- (a) The design of the scaffold shall take into account:
- (i) the most adverse combination of dead, live and environmental loads that can reasonably be expected during the period that the scaffold is in use;

- (ii) the dead, live and environmental loads which will need to be calculated during the design stage to ensure the supporting structure and the lower standards are capable of supporting the loads;
- (iii) the approvals that may be required by a competent engineer through the erection period; and
- (iv) manufacturer specifications relating specifically to scaffold components and accessories.

### **3.3.6 Environmental Loads**

- (a) The design of the scaffold shall take into account environmental loads which include:
  - (i) consideration of environmental loads, particularly the effects of wind and rain on the scaffold. This shall include environmental loads imposed by wind and rain which may be heightened if perimeter containment screens, shade cloth or signs are attached to the scaffold; and
  - (ii) staggering of the joints in standards which may help control the risk of scaffold collapse from environmental loads with the distribution of load points.

### **3.3.7 Dead Loads**

- (a) The design of the scaffold shall take into account dead loads which include:
  - (i) dead loads which refer to the self-weight of the scaffold structure and components including any working, catch or access platforms, stairways, ladders, screens, sheeting, platform brackets, suspension ropes, secondary ropes, traversing ropes, tie assemblies, scaffolding hoists or electrical cables; and
  - (ii) that scaffolds shall not be used to support formwork and plant, such as hoist towers and concrete pumping equipment, unless the scaffold is specifically designed for this purpose.

### **3.3.8 Live Loads**

- (a) The design of the scaffold shall take into account live loads which include:
  - (i) the weight of persons;
  - (ii) the weight of materials and debris;
  - (iii) the weight of tools and equipment; and
  - (iv) reasonably foreseeable impact forces.

### **3.3.9 Supporting Structure**

- (a) The design of the scaffold shall take into account the integrity of supporting structures including:
  - (i) the capability of the supporting structure to bear the most adverse combination of loads reasonably practicable during the use of the scaffold;
  - (ii) obtain advice from an engineer before erecting scaffolds on verandas, suspended flooring systems, compacted soil, parapets and awnings; and

- (iii) propping which may be required where the supporting structure is not capable of bearing the most adverse combination of loads.

### 3.3.10 Stability of Scaffolding

- (a) The design of the scaffold shall take into account scaffold stability which may be achieved by:
  - (i) tying the scaffold to a supporting structure;
  - (ii) tying to a supporting structure;
  - (iii) increasing the dead load by securely attaching counterweights near the base (kentledge scaffold); and
  - (iv) adding bays, stabilizers or mobile outriggers to increase the base dimension.

### 3.3.11 Design of the Working Platforms

- (a) Working platforms, except suspended scaffolds shall be designed to have duty classifications as follows:
  - (i) access only;
  - (ii) light working; or
  - (iii) heavy working
- (b) Each scaffold shall be designed to carry the required number of working platforms and to support its live loads.

### 3.3.12 Rubbish Chutes

- (a) Designers shall ensure the design of a scaffold takes account of the additional loads which may be imposed in the normal use of a rubbish chute, by the additional wind loading and by further loads in the event of a blockage.

## 3.4 Scaffolding General Requirements

### 3.4.1 Safe Erection of Scaffolding

- (a) Employers shall ensure all activities comply with the requirements of *AD EHS RI – CoP – Working at Heights*, and specific scaffolding working at heights control measures are implemented (eg. advance guardrails).
- (b) Employers shall ensure that scaffolding components are erected so as to install and provide:
  - (i) a platform at least 450 mm wide along the full length of the section of scaffolding;
  - (ii) edge protection across the space between the uprights forming the outer frame of the scaffolding at the level the scaffolding has reached; and
  - (iii) a means of access (for example, temporary stairs or a ladder) to the level the scaffolding has reached.

- (c) Employers shall ensure that before each level of scaffolding is erected (except in the case of the first lift), a platform shall be installed below the level at a distance of not more than:
  - (i) 3 meters if the erection of the scaffolding is housing construction work; or
  - (ii) 2.4 meters otherwise.
- (d) Employers shall ensure the following points during the erection of scaffolding:
  - (i) a section of the platform may be left open to allow the passing of planks or other scaffolding components between levels for the duration that the work is carried out only;
  - (ii) a platform does not need to be installed on the bottom level of the scaffolding;
  - (iii) a platform may be removed after work has started two levels above it; and
  - (iv) if platforms are removed, they shall only be removed in a progressive manner. Prior to dismantling the complete scaffold, planks shall be reinstalled to ensure safety of employees.
- (e) Employers shall ensure ground conditions are stable and inform scaffold erectors of any factors which may affect ground stability, before the scaffold is erected. Where there are known ground stability problems the designer shall be consulted and further control measures implemented.
- (f) Scaffold 'fittings' and other connections shall be securely tightened. Where 'safety fittings' are used, they shall be fitted in accordance with the scaffold plan.
- (g) Scaffold components shall be installed as the scaffold is erected which shall include installation of:
  - (i) all bracing and ties; and
  - (ii) guy ropes or buttresses.
- (h) Employers shall ensure the following during the erection of scaffolding:
  - (i) provide an appropriate number of scaffolders to minimize manual handling risks;
  - (ii) develop a methodical work sequence for each scaffolder to reduce the need of traversing the scaffold during erection;
  - (iii) provision of a fully boarded work platform; and
  - (iv) do not allow scaffolders to climb on guardrails to gain extra height.
- (i) Where the internal gap on scaffolding (includes hanging bracket scaffolding) is greater than 225 mm, employers shall implement appropriate control measures to manage the risk of a fall by installing:
  - (i) internal edge protection; or
  - (ii) additional scaffold planks to minimize the size of the internal gap; or
  - (iii) providing safety harnesses to employees and developing a safe system of work.

### 3.4.2 Soleboards and Baseplates

- (a) Employers shall ensure the following with regards to soleboards and baseplates:
- (i) baseplates are used on all scaffolding uprights or standards to evenly distribute the load from the scaffold to the supporting surface;
  - (ii) the use of soleboards on less stable surfaces such as sand, soil, gravel, fill or other such surface shall be in accordance with the scaffold design;
  - (iii) the size of the soleboard shall vary depending on the supporting surface. If in doubt designers may need to consult an engineer to determine the bearing capacity of the ground or other supporting structure;
  - (iv) the minimum size of a soleboard shall be 225mm x 450mm; and
  - (v) needles and spurs shall be considered where ground conditions are very unstable.

### 3.4.3 Working Platforms

- (a) Employers shall ensure the following with regards to working platforms:
- (i) each scaffold shall be designed to carry the required number of working platforms and to support its live loads;
  - (ii) scaffold boards / platform shall:
    - 1) have a slip-resistant surface;
    - 2) not be cracked or split;
    - 3) be of uniform thickness;
    - 4) be captive (eg. cannot be kicked off) and fixed to prevent uplift or displacement during normal use; and
    - 5) be positioned so that no single gap between scaffold boards exceeds 25 mm and the total gap between all scaffold boards does not exceed 50 mm.
  - (iii) scaffold boards shall not be lapped on straight runs of modular and tube and fitting scaffolding but may be lapped on hanging bracket scaffolds;
  - (iv) if using plywood sheets to cover gaps between scaffold bays the plywood sheets shall be:
    - 1) a minimum of 17 mm thick;
    - 2) only used to cover gaps less than 500 mm wide (unless approved by an engineer); and
    - 3) metal planks lapped on other metal planks shall be secured.
  - (v) the overhang of scaffold boards which are supported by transoms shall not be greater than 150 mm or 4 times the scaffold board thickness - whichever is less.

### 3.4.4 Tying of Scaffolds

- (a) Employers shall ensure the following with regards to tying scaffolds:
- (i) tie methods and spacing shall be in accordance with the instructions of the manufacturer, designer or supplier;

- (ii) consultation with the scaffold designer, manufacturer, supplier or an engineer if it is not reasonably practical to position the ties in accordance with the instructions;
- (iii) additional ties are provided in the following situations:
  - 1) the scaffold is sheeted or netted due to increased wind loadings;
  - 2) it is used as a loading platform for materials or equipment; and
  - 3) attaching lifting appliances or rubbish chutes.
- (iv) a competent person regularly inspects the existence and effectiveness of scaffold ties to ensure they are not modified or altered by unauthorized persons which may include finishing trades who may loosen, relocate or remove ties to obtain access to walls and openings;
- (v) consultation with the scaffold designer or supplier before attaching additional loads on the scaffold, for example, signs and perimeter containment screens;
- (vi) cast-in anchors or 'through ties' (eg. pass through an opening) are used as the preferred option to drill-in expansion or chemical anchors for securing scaffold ties;
- (vii) drill-in expansion anchors shall be limited to the load (torque) controlled type. The working load limit shall be limited to 65% of the 'first slip load' stated in the information provided by the supplier;
- (viii) deformation-controlled anchors, including self-drilling anchors and drop-in (setting) impact anchors, shall not be used;
- (ix) where drill-in expansion or chemical anchors need to be used, the following proportions of anchors shall be tested and proof loaded to the working load multiplied by a factor of 1.25:
  - 1) 10% of drill-in expansion anchors; and
  - 2) all chemical anchors.
- (x) drill-in expansion or chemical anchors shall have a safety factor of 3 to 1 on their failure load. If any anchors fail, the remaining anchors on the same level shall be tested;
- (xi) ties shall not obstruct access along the working and access platforms; and
- (xii) ties shall interconnect with both the inner and outer scaffold standards (unless otherwise specified by an engineer) to increase the rigidity of the scaffold.

### 3.4.5 Walkways

- (a) Employers shall ensure that every board or plank forming part of a working platform, gangway or run shall be:
  - (i) strong enough for the intended work and not be less than 200mm wide if 50mm thick or less, and not less than 150mm wide if more than 50mm thick;
  - (ii) not overlapping their supports by more than four times their thickness, unless they have been secured against tipping; and
  - (iii) level and flat so as to prevent tripping hazards, where laps occur beveled strips are to be provided to minimize the risk of tripping.

### 3.4.6 Width of Walkways

- (a) Employers shall ensure the following widths are maintained when erecting and using scaffolding:
- (i) Working platforms more than 2 meters high, shall be:
    - 1) minimum 800mm wide (4 boards) when used for persons only and not for materials;
    - 2) minimum 1.0 meters wide (5 boards) when used for persons and for the deposit of materials, though there shall be a 430mm passage left for persons, and clear of materials. This passage shall be increased to 600mm if barrows are to be used.
    - 3) minimum 1.0 meters wide (5 boards) if used to carry a trestle or any other higher platform, and 1.20 meters wide (6 boards) if used by masons; and
  - (ii) when work is light and of short duration, minimum 600mm wide (3 boards) platforms are permitted.

### 3.4.7 Toe Boards and Guardrails

- (a) Employers shall ensure the following requirements with regards to guardrails and toe boards:
- (i) guardrails and toe boards are required at the outside of and ends of all working platforms from which personnel and materials can fall;
  - (ii) guardrails and toe boards shall be fitted on the inside of standards to prevent outward movement;
  - (iii) toe boards shall rise at least 150mm above the working platform;
  - (iv) guardrails shall be fitted at a minimum height of 950mm;
  - (v) mid-rails shall be provided on all scaffolds with a working platform level over 2 meters high;
  - (vi) gaps between toe boards and mid-rails and guardrails and mid-rails shall not exceed 470mm;
  - (vii) where materials are stacked on the working platform additional height toe boards may be required or debris guards shall be fitted; and
  - (viii) if guard rails and toe boards are removed to permit the passage of personnel and materials, they shall be replaced as soon as reasonably practicable afterwards.

### 3.4.8 Landing Places

- (a) Employers shall ensure the following with regards to landing places:
- (i) landing places between ladder access routes shall be provided at each 9 meters of height and be fitted with both toe boards and guard rails; and
  - (ii) all openings through which ladders and staircases pass shall be as small as reasonably practicable and shall not exceed 500mm in width.

### 3.4.9 Access and Egress

- (a) Employers shall provide safe access to and egress from scaffold during the erection, use and dismantling. The following means of access shall be considered:
- (i) temporary stair towers or portable ladder access systems installed at the start of erection, progressed with the scaffold, and used by the scaffolder whenever reasonably practicable;
  - (ii) permanently installed platforms or ramps;
  - (iii) built-in access for mobile towers / system scaffolding;
  - (iv) mechanical personnel hoists used in conjunction with permanent stairs or temporary stair towers which are to be used in an emergency or in the event of a power failure; and
  - (v) using the existing stairs of a building, provided such access is safe.

### 3.4.10 Perimeter Containment Screening

- (a) Employers shall ensure the following with regards to perimeter containment screening:
- (i) design calculations shall be undertaken to determine the wind loading on the scaffold and the requirements for any structural reinforcement or additional ties;
  - (ii) perimeter containment screening shall provide protection to prevent materials falling outside of the containment. If plastic sheeting is used it shall be lapped in such a way so as to ensure materials cannot fall outside the containment area;
  - (iii) where perimeter containment screening is used to redirect a falling object that may reasonably be expected to hit the perimeter containment screening, onto a catch platform, each screen shall be fitted vertically to the top of or flush with, the outer edge of the catch platform in order to redirect a falling object;
  - (iv) where perimeter containment screening is not used to redirect a falling object onto a catch platform, each screen shall be designed to prevent an object, that may reasonably be expected to hit the perimeter containment screening, from falling on persons from the level at which the work is to be done;
  - (v) each of the following gaps shall not exceed 25mm:
    - 1) the gap, measured horizontally, between screens immediately beside each other or a screen and the framework supporting it; and
    - 2) the gap, measured vertically, between a screen and another screen immediately above it or a screen and the framework supporting it.
  - (vi) the framework supporting a screen shall be able to bear the load of the screen.

### 3.4.11 Scaffold Alteration

- (a) Employers shall ensure control measures are implemented to minimise the risk of injury during scaffold alteration including:
- (i) the scaffold designer is consulted before making any alterations;
  - (ii) only a competent person makes scaffold alterations;
  - (iii) scaffold alterations are in accordance with the scaffold plan;
  - (iv) alterations do not compromise the structural integrity of the scaffold; and

- (v) systems are in place (eg. regular inspections) to identify unauthorized interference with the scaffold.

### 3.4.12 Safe Dismantling of Scaffolding

- (a) Employers shall ensure the following with regards to scaffolding dismantling:
  - (i) all dismantling activities shall be carried out progressively, reversing the erection sequence and scaffolders shall work along the elevation removing the guardrails and then lowering the scaffold boards from that section to the lift below;
  - (ii) scaffolders shall not remove the guardrails from the whole elevation before lowering the boards;
  - (iii) additional ties may be required during dismantling and in any case no ties or braces shall be removed in advance of general dismantling;
  - (iv) checks shall be carried out as to the stability of the structure and platforms shall be cleared of all materials and debris before dismantling begins;
  - (v) once a scaffold is partly dismantled, all access to the dismantled sections shall be barred and a warning sign prominently displayed;
  - (vi) all materials shall be lowered carefully; surplus boards and fittings shall be removed from the platforms as the work progresses and, particularly, at the end of each day;
  - (vii) fittings shall be stacked at ground level unless the first lift has been specially designed to support the extra loading;
  - (viii) the public shall be protected at all times and if necessary, barriers shall be erected round the area where scaffolding is being dismantled;
  - (ix) edge protection and any means of access can be removed as the scaffolding is dismantled, provided it is removed as late as reasonably practicable;
  - (x) a platform of at least 450 mm wide, at the level the dismantling has reached, is in place, where reasonably practicable;
  - (xi) that when dismantling scaffold, the platform immediately below the level the employee is standing on, has a full set of planks across its width;
  - (xii) a section of the scaffold working platform may be left open to allow the lowering of scaffolding components between levels; and
  - (xiii) all materials shall be passed from one scaffolder to another or lowered using a gin wheel. Under no circumstances are materials to be 'bombed' or thrown to the ground level.

### 3.5 Documented Safe Systems of Work

- (a) In accordance with *AD EHSMS RF – Element 01 – Roles, Responsibilities and Self-Regulation* Section 3.2.5 employers shall ensure documented safe systems of work are developed and implemented that include:
  - (i) erecting, dismantling, maintaining and altering the scaffolding;
  - (ii) using the scaffolding; and
  - (iii) activities near the scaffolding which may include other employees and members of the public.

- (b) To develop the documented safe systems of work employers shall consult with:
- (i) the scaffold designer to discuss the design loads and the capability of the structure to support any additional loadings;
  - (ii) the principal contractor to assess the location of underground drains or pits and the work shall be planned so as to avoid excavating service trenches under, through or adjacent to scaffolds; and
  - (iii) employees regarding erecting, dismantling, maintaining and altering the scaffolding.
- (c) Employers shall ensure that the documented safe systems of work includes a drawing and details the elevations and sections of the scaffold which shall be communicated to those undertaking the scaffolding work.
- (d) Employers shall ensure that the documented safe system of work addresses the following issues.
- (i) type of scaffold to be erected;
  - (ii) details of any special design considerations;
  - (iii) scaffold erection methodology;
  - (iv) means of access and egress;
  - (v) type and frequency of ties;
  - (vi) façade and ledger bracing requirements; and
  - (vii) safe work sequences including prevention of persons or materials falling.

### 3.6 Working at Height

#### 3.6.1 Specific Work at Height Requirements for Scaffolding

- (a) Employers shall ensure that all employees engaged in the erection of scaffolding are issued with a personal safety harness. Harnesses are required to be worn by scaffolders at all times whilst they are working at or may be required to work at a height. Safe systems of work shall be developed and scaffolders shall 'clip-on' whenever they are working outside of an area protected by at least one guardrail provided at a height of 950mm from the working platform.
- (b) In addition to *EHS RI – CoP 23.0 – Working at Heights* employers shall further consider the hazards which may increase the risk of injury from a fall while erecting, altering or dismantling scaffolding which include:
- (i) poor environmental conditions;
  - (ii) strong winds that may cause employees to lose balance;
  - (iii) rain causing a slippery work surface;
  - (iv) glare emitted from work surfaces and/or poor lighting affecting visibility;
  - (v) materials, equipment or protruding objects below, or in adjoining work area, for example:
    - 1) pallets of construction materials;
    - 2) vertical reinforcing steel;
    - 3) a rubbish skip;

- 4) exposed starter bars; and
- 5) picket fences;
- (vi) avoid areas not identified or protected including ladder access voids;
- (vii) incomplete scaffolds or loose scaffold components where work is being done, or is reasonably foreseeable to be done; and
- (viii) inappropriate training, instruction and supervision of scaffold employees.

### 3.6.2 Additional Risk Control Measures whilst Working at Height

- (a) In addition to *EHS RI – CoP 23.0 – Working at Heights* employers shall ensure the health and safety of their employees and implement control measures that shall be used to prevent or minimise exposure to the risk of being hit by falling objects and shall include:
  - (i) establishment of exclusion zones around scaffolding and adjoining areas to prevent unauthorized persons from accessing the area;
  - (ii) use of perimeter containment screening, scaffold fans, hoardings or gantries to contain falling objects;
  - (iii) erect and dismantle scaffold in built-up areas during quiet times;
  - (iv) never drop materials from scaffolds; and
  - (v) attach danger tags and warning signs such as “Keep Out – Falling Objects” and ‘Danger – Incomplete Scaffolding’ in obvious locations to warn persons of hazards.

### 3.7 Mobile Plant and Traffic

- (a) Employers shall implement control measures that shall be used to prevent or minimise exposure to the risk of injury from moving plant and traffic which may include:
  - (i) re-route motor vehicles and mobile plant away from the location of the scaffold, for example, by using traffic controllers to redirect traffic;
  - (ii) use barricades, signs, posts, buffer rails, guards, or concrete or timber curbs to prevent mobile plant and traffic from coming into contact with scaffolding;
  - (iii) ensure scaffolding does not have any unnecessary protrusions, such as over-length transoms, tie tubes or over-height standards; and
  - (iv) ensure control measures are in accordance with *AD EHS RI – CoP – 22.0 – Barricading of Hazards* and *AD EHS RI – CoP – 17.0 – Safety Signage and Signals*.

### 3.8 Mixing and Matching Scaffold Components

- (a) Employers shall implement control measures that shall be used to prevent or reduce the risk of injury and scaffold collapse due to the incorrect mixing and matching of components and shall include:
  - (i) do not mix scaffolding from different manufacturers, unless a competent engineer confirms that:
    - 1) the components are of compatible size and strength;
    - 2) the components have compatible deflection characteristics;

- 3) the fixing devices are compatible; and
  - 4) the mixing does not lessen the strength, stability, rigidity or suitability of the scaffold;
- (ii) avoid mixing and matching different modular systems - often connection points known as the 'star' and 'banana' used on these systems are of a different shape and tolerance and are not compatible;
  - (iii) do not mix scaffolding tubing of different outer diameters and strengths;
  - (iv) do not mix aluminum and steel components as steel clamps may cause aluminum tubing to be crushed, reducing the strength of the tube; and
  - (v) 'beam clamps' or 'flange clamps' shall be provided with information about safe use, including tightening torque required and when to use different types of couplers.

### 3.9 Partly Erected or Dismantled Scaffolds

- (a) Employers shall ensure no scaffold or part of a scaffold be partly erected or dismantled and remain in such a condition that it is capable of being used unless the scaffold complies with the following:
  - (i) a prominent warning notice positioned at or near any point of access indicating that the scaffold, or any part thereof shall not to be used; and
  - (ii) access to the scaffold or any part thereof is, as far as is reasonably practicable, effectively blocked off.

### 3.10 Care and Maintenance of Scaffolding

- (a) Employers shall ensure appropriate maintenance of all scaffolding materials and ensure:
  - (i) that when not in use, scaffolding materials are appropriately stored;
  - (ii) when tubes are supplied with a protective coating, care shall be taken to protect the coating so that the tubes do not deteriorate excessively;
  - (iii) unprotected steel shall not be used where the atmosphere is particularly corrosive;
  - (iv) tube straightening shall only be carried out by competent person(s) as there is a tendency for work hardening and consequent brittleness to occur during bending and straightening operations;
  - (v) split or damaged sections of tube shall be cut out and discarded, all cuts being at right angles to the tube axis;
  - (vi) couplers and fittings shall be examined before use. Moving parts shall be free from wear or damage and be well lubricated;
  - (vii) scaffold boards shall be inspected after each job and any showing signs of abuse, decay or excessive warping shall be discarded. End hoops, or bands, shall be replaced or re-fixed as necessary;
  - (viii) where scaffold boards have split ends which do not exceed the standard limits, nail plates may be used and no other repairs shall be carried out;
  - (ix) scaffold boards shall not be painted or treated in any way which could conceal defects;

- (x) scaffold boards shall be cleaned on return from site, then stacked flat, and raised from the ground on cross battens;
- (xi) scaffold boards shall not be used as makeshift crawling boards or for shuttering or propping up door frames; and
- (xii) scaffold boards or other components shall never be dropped or thrown down from a height. The impact resulting from this form of abuse may result in unseen but potentially lethal damage.

### 3.11 Construction and Material

- (a) Employers shall ensure the following with regards to the construction of scaffolds and the materials used in scaffolding:
  - (i) every part of a scaffold shall be of good construction, made of appropriate and sound material and of appropriate strength for the purpose for which it is used;
  - (ii) appropriate materials shall be provided for, and shall be used in the construction of scaffolds;
  - (iii) scaffold construction shall take into consideration the type of work, load, height, and also weather conditions;
  - (iv) timber used for scaffold shall be of appropriate quality, be in good condition and have the bark completely stripped off;
  - (v) timber used for scaffolds, trestles, ladders and folding stepladders shall not be so painted or treated that defects cannot be easily seen;
  - (vi) metal parts used for scaffolds shall be of good quality, be in good condition and free from corrosion or other defect that could affect their strength;
  - (vii) no defective material or defective part shall be used for a scaffold;
  - (viii) all material and parts of scaffolds shall, when not in use, be kept in good condition and kept apart from any materials or parts unsuitable for scaffolds; and
  - (ix) every scaffold shall be appropriately maintained/kept clean and every part shall be kept fixed, secured, or placed in position as to prevent, so far as is reasonably practicable, accidental displacement.

### 3.12 Ladders used in Scaffolds

#### 3.12.1 Ladders

- (a) In addition to *AD EHS RI – CoP 37.0 – Ladders*, the following are additional safe work practices which shall be followed when working on ladders used in scaffolds:
  - (i) ladders may be used where access to the working platform is needed by only a few persons, and where tools and equipment can be delivered separately to the working platform (for example, by materials hoist, crane or a rope and gin wheel);
  - (ii) ladders shall be within a separate ladder access bay of the scaffold, wherever space permits;
  - (iii) if the access bay is part of the working platform, a trap door shall be provided;
  - (iv) strict control measures shall be implemented to ensure the trap door remains closed while working from the platform; and

- (v) ladders shall be set up on a firm, level surface and not used on scaffold bays to gain extra height.

### 3.12.2 Ladders not to be used as Uprights

- (a) Ladders shall not be used as uprights to support a single board working platform. This practice is strictly prohibited.

### 3.12.3 Ladders when Provided for Access

- (a) Employers shall ensure the following with regards to the use of ladders for access:
  - (i) top of the ladder shall be supported by the stiles resting on a firm, even base;
  - (ii) stiles shall be securely lashed or fixed with a ladder clamp and shall be kept free from all obstruction, materials and rubbish, and if they become slippery, shall be cleaned or sanded as quickly as reasonably practicable;
  - (iii) set at a working angle of 75 degrees to the horizontal, eg. one meter out for every four meters of height, and extend at least 1.05 meters (5 rungs) above platform level to provide appropriate handhold at all stepping-off points;
  - (iv) rungs on stepping-off points shall be level with the working platform; and
  - (v) ladders required to rise more than 9 meters of vertical height shall have an intermediate landing place provided.
- (b) Outside of working hours, ladders shall be removed or boarded off to prevent access.

### 3.13 Mobile and Static Tower Scaffolds

- (a) Employers shall ensure the following with regards to the erection, use and dismantling of tower scaffolds and mobile tower scaffolds:
  - (i) where system mobile or static tower scaffolds are used the manufacturer's instructions shall be retained or provided by the supplier of the tower;
  - (ii) the height of a mobile or static tower scaffold, from the bottom of the scaffold to the working surface, shall be no greater than three times the minimum base dimension, unless otherwise specified by the manufacturer, supplier or designer;
  - (iii) access the tower using a secure internal ladder with a protected opening (for example, a hinged trap door);
  - (iv) select the appropriate size and capacity castors to support the total mass of the dead and live loads of the tower scaffold;
  - (v) use castors that have the working load limit clearly marked;
  - (vi) castors fitted to standards shall be locked when the tower is being erected or in use;
  - (vii) castors with adjustable legs shall be used and adjusted to keep the platform level when the supporting structure / surface is at different heights;
  - (viii) incorporate plan bracing at the base of mobile or static tower scaffolds to provide greater stability in accordance with the manufacturer's instructions;
  - (ix) before moving mobile or static tower scaffolds check that:
    - 1) there are no power lines or other overhead obstructions;

- 2) the ground is firm and level;
  - 3) no person is on the scaffold;
  - 4) no equipment and material can be dislodged from the platform;
  - 5) the supporting surface is free of obstructions (a small obstruction may cause a mobile scaffold to overturn); and
  - 6) electrical equipment and leads cannot be tangled.
- (x) never move the scaffold in windy conditions;
  - (xi) push or pull a mobile tower scaffold from the base – never use powered vehicles to move the scaffold;
  - (xii) stabilizer shall be left in position and raised no more than 25mm; and
  - (xiii) do not lift mobile or static tower scaffolds using a crane unless checked by a competent engineer and under no circumstances use a crane to move a lightweight aluminum scaffold.

### 3.14 Inspection of Scaffolding

- (a) Employers shall ensure procedures are developed for the inspection of scaffolding to ensure it remains in a safe and useable condition. Employers shall:
  - (i) ensure after erection and prior to use, the scaffold shall be inspected by a competent person to ensure that the scaffold has been erected in compliance with the manufacturer's specifications or the design drawings;
  - (ii) if design drawings have been prepared by an engineer, the engineer shall be consulted and provide a sign off certification against the scaffold design drawings;
  - (iii) keep copies of the certification on site whilst the scaffold is in use;
  - (iv) ensure the person responsible for the erection of the scaffold provides the employer with a handover certificate which is kept on site until the scaffold has been dismantled;
  - (v) ensure that as a minimum, the inspections shall take into account:
    - 1) scaffold is built in accordance to manufacturer's instructions and approved design drawings;
    - 2) the scaffold structure is appropriate;
    - 3) the supporting structure is appropriate;
    - 4) working platforms are secured and protected;
    - 5) access and egress is appropriate; and
    - 6) the scaffold shall enable the work to be performed appropriately and safely.
  - (vi) determine the frequency of inspections which may vary depending on weather and site conditions, the type and size of the scaffold and the risks associated with scaffold collapse. However, the minimum requirements for scaffold inspections shall be as follows:
    - 1) before first use and within every 7 days after this;
    - 2) after alteration or repair; and

- 3) after any event that could affect the stability of the scaffold (for example, following strong winds or storms).
- (vii) ensure inspection records are kept on site and include the location, comments, date and time of inspections, relevant design or specification reference and the details of the person who conducted the inspection.
- (b) Each individual scaffold, including mobile and tower scaffolds, shall be clearly marked, at a prominent location, with the following information;
    - (i) date erected;
    - (ii) use;
    - (iii) loading;
    - (iv) last inspection; and
    - (v) inspected by.

## 4. References

- *AD EHSMS RF – Element 01 – Roles, Responsibilities and Self-Regulation*
- *AD EHSMS RF - Element 02 – Risk Management*
- *AD EHSMS RF – Element 09 – Compliance and Management Review*
- *AD EHS RI – CoP 17.0 – Safety Signage and Signals*
- *AD EHS RI - CoP 20.0 – Safety In Design*
- *AD EHS RI – CoP 22.0 – Barricading of Hazards*
- *AD EHS RI – CoP 23.0 – Working At Heights*
- *AD EHS RI - CoP 37.0 – Ladders*
- *AD EHS RI -CoP 53.0 – EHS Management during “Construction Work”.*

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