Dubai Municipality

Health and Safety Department

Technical Guidelines for

Mobile Access Towers

DM-HSD-GU74-MAT2

CONTENTS

1. INTRODUCTION

Mobile access towers (towers) are a safe, simple and versatile means of working at height utilizing prefabricated components which are assembled in a modular manner to achieve the required height by following the manufacturers' instruction manual. Current good practice affords the trained and competent user the protection from falls throughout the assembling, use and dismantling processes.

UAE Federal Law No. 8 of 1980, UAE Labour Law and Dubai Municipality Local Order No. 61 of 1991 clearly emphasized the role of employers to take every precaution necessary for the protection of their workers and ensure their safety from any occupational illness or potential work accidents. The employer shall also initiate appropriate control measures to improve work conditions and thereby provide a healthy workplace for his/her workers.

This Technical Guideline focuses on the recommended working practices for the safe use of Mobile Access Towers including assembling and dismantling, safety features and testing. This guidance document is recommended to be read in conjunction with associated health and safety Technical Guidelines and Code of Practices of Dubai Municipality available in www.dm.gov.ae.

2. PURPOSE

To support all owners, managers, employees and stakeholders from industries, construction and service sectors' institutions in the Emirate of Dubai to prevent/reduce workplace accidents while using Mobile Access Towers' at work.

3. SCOPE

This technical guideline shall apply to all establishments using mobile access towers at their work in the Emirate of Dubai.

This guideline relates to mobile access towers which are made from prefabricated components in standard configurations to a maximum height of 12 meters indoors and 8 meters outdoors and which have a third party product conformity certification meeting BS EN 1004 standard.

Note: Configurations outside the scope of BS EN 1004, such as towers with cantilevers, towers on stairs, towers with bridging units, linked towers and towers outside the height limits of BS EN 1004 must be designed in accordance with BS 1139-6.

4. DEFINITION

Unless the context otherwise requires, the following terms shall be deemed to mean the definitions hereby assigned to them.

BS

British Standard.

EN

European Norms (Standard).

Manufacturers' Instruction Manual

A document (usually illustrated pictorially) giving step by step instructions to follow when assembling, altering or dismantling the tower, and a kit list (a list of the components required for a given tower).

5. GUIDELINES

A. Hazard Identification and Risk Assessment

Before undertaking any work, employers must identify the hazards and a conduct risk assessment to determine if a tower is a suitable work equipment for the type of work that will be carried out considering the work area conditions it will be used in.

Following factors to be considered during the risk assessment related to mobile access towers:

- Ground surface level;
- Ground strong enough to bear a load;
- Tower movement/access route;
- Stability;
- Weather;

- Electricity lines;
- Around activities (people and machine movements).

The risk assessment shall be communicated to the users of the towers by the employer or the nominated responsible person that will be supervising the work activity.

B. Pre-Assembly Inspection

Before assembling the tower, the competent person should inspect all the components against those listed in the manufacturers' instruction manual. They should check that all the components are:

- Present,
- Undamaged,
- Functioning correctly, and
- Be from the same manufacturer.

They should specifically check that all castors rotate freely and their brakes function correctly.

C. Safe Assembly and Dismantling

Mobile access towers are not designed to be used in conjunction with personal fall protection systems (such as a harness and lanyard) as this kind of work platform is already designed and provided with a preventive collective protection provision in the form of guardrails.

There are no suitable anchorage points on a mobile access tower suitable for connecting of personal fall protection equipment either as work positioning or fall arrest. Connection of personal fall protection may result in the collapse or overturning of the tower in the event of a fall arrest incident.

There are methods of installing and dismantling guard-rails that do not require the assembler to stand on an unguarded platform, these are known as:

- Advanced Guard Rail System (AGR)
- Through the Trap (3T Method)

The AGR system involves the use of specially manufactured guardrail frames. These are fitted into position from the already protected platform the user is standing on.

The 3T method involves the assembler being within a protected position within the platform trap door from where they may safely install and dismantle the guardrails without standing on an unprotected platform. Safe assembly of the guardrail sections can be achieved with the user sitting on the platform with their legs through the trap and their feet supported on the ladder section below.

Informative figures can be found in Annex C.

D. Safe Access to the Working Platform

For safe access to the working platform level, the tower will provide either the following:

- Vertical ladder access;
- Stair ladder access; or
- Stairway access.

All access must be from the inside of the tower. Never climb up the outside as this could cause instability of the tower, causing it to overturn.

Informative figures showing the different access types can be found in Annex B.

E. Tower Stability

The major reason for selecting a tower is the lightness of the components and the ease of assembly. Towers are easy to move from point to point, but the lightness of the structure means that care must be taken to ensure the stability of the tower.

The manufacturers' instruction manual will provide details on the correct stabilizers or ballast which must be fitted to prevent the tower overturning during use.

Tower stability during use can be affected by side loads which can include:

- Overreaching will cause the tower to overturn. It is far safer to move the tower.
- Work activity that involves applying a sideways load to the tower, for example water-jetting, may overturn the tower.
- If heavy items are hoisted up outside of the tower, it could become unstable and overturn.

Ensure the castor brakes are always locked, except when the tower is being moved.

F. Wind Loads

Mobile towers are vulnerable to wind loads. It is recommended by many manufacturers that if the wind reaches a speed of 27 kilometres per hour then all work should cease on the tower.

If there is a possibility of the wind reaching speeds approaching or in excess of 64 kilometres per hour, the tower should be dismantled.

Wind speed can often be greater further away from ground level. It can also increase as it funnels between buildings or other solid structures. Users should be aware of the possibility of these wind dynamics and sudden high winds in exposed or gusty conditions.

G. Tower Movement

Caution shall be observed by moving towers thru manual effort (by pushing). Never use any machine or equipment when moving mobile access tower.

Before any movement check:

- The intended route is clear of obstructions or obstacles at ground level and overhead;
- The tower is clear of people and materials;
- Tower overall height is reduced to 4 meters; and
- Stabilizer should be left fitted to the tower and raised a maximum of 25 millimeters above the ground.

H. Platform Levels and Guardrails

All platforms from which it is possible to fall a distance liable to cause injury must be fitted with guardrails. These must be correctly fitted in accordance with the manufacturers' instruction manual.

Once fitted, there should be no opening in the side protection larger than 470 mm and the top surface of the upper guardrail should be a minimum of 950 mm above the platform level.

The working platform must also be fitted with toe boards which are a minimum of 150 mm high. Intermediate platforms do not normally need toe boards. However, any platform where a risk assessment shows a risk of falling objects which could cause injury, should also be fitted with toe boards.

A figure showing the dimensional requirements is shown in Annex D.

Platform units, as stated in BS EN 1004, shall be a minimum of 600 mm wide.

I. Safe Working Loads

Towers shall never be overloaded. This is dangerous and could cause the tower to become unstable, leading to significant injury or death.

The tower should have labels or signs indicating the maximum safe capacity of the tower and the platforms which are normally fitted by the manufacturer and stated in the manufacturers' instruction manual. Stated capacity must not be exceeded.

J. Gaining Extra Platform Height

Never use ladders, step ladders, boxes or similar items to gain extra height. If the working platform height is insufficient to undertake the tasks required, it should be re-configured in accordance with the manufacturers' instruction manual. Alternatively, more appropriate piece of work access equipment should be used.

Never use adjustable legs for gaining extra platform height. If the tower is fitted with adjustable legs, these are only provided for adjusting the tower so that it is vertical and platform is horizontal.

K. Safety of the Public

At the base of the tower, if the risk assessment highlights the need, a safety zone should be put in place using suitable barriers. This will ensure that people, machines or objects do not accidentally collide with the tower. It will also minimize the risk of personal injury of any materials were to fall from the tower.

L. Electrical Hazards

Working in the vicinity of overhead high voltage lines can be extremely dangerous, and necessary safety precautions must be taken. There may also be special rules established for particular sites.

On controlled sites, to pass under overhead electric lines, ground level barriers should be positioned and "goal posts" erected at the place where the tower may pass under the overhead lines.

If there is no need to pass under the overhead lines, both ground level barrier and high-level markers, (usually bunting) will be placed to keep you at a safe distance.

Not all sites are controlled, and the user must always be aware of the dangers of overhead electric lines.

A minimum safe distance must always be kept between the overhead lines and the closest point of the mobile access tower. Refer to the existing safe distance requirements of DEWA or any concerned authority where work is conducted. Seek advice before commencing work.

All overhead lines and other electrical apparatus should be treated as live unless declared "dead" and "safe" by DEWA (or other line operator).

Strong winds may cause overhead electric lines to sway and thus reduce the distance to a point where you are in danger.

The recommended minimum safe working distance must be rechecked and confirmed if the work platform is moved from the original location.

Ensure to observe barriers and markers where these are erected to mark safe working distances
Ensure that the tower is properly guided by an experienced signaller when moving it under or near overhead electric lines.

Do not raise any part of the tower when travelling under overhead lines or between two sets of goal posts.

Ensure to always seek advice from a competent person if in doubt on how to carry out the tower movement or work safely.

M. Instructions and Training

Work at height is a dangerous activity and therefore recognized training should always be obtained.
All employees shall be competent to perform their work safely and they should have minimum OHS understanding.

All mobile access tower operators shall undergo competency training from EIAC accredited third party company. All training shall be based from an internationally or UAE recognized standard (e.g. PASMA).

Apart from general training (e.g. induction training), all of the concerned employees are to be trained on the organizations' safe operating procedures (SOP's) for their respective activities and emergency preparedness and response including rescue.

It is recommended that all responsible persons for work at height using Mobile Access Towers are trained (e.g. PASMA towers for managers course).

Ensure that all employees that will be involved in mobile access tower activity shall be briefed thru tool box talk prior start of work.

Records of any training including induction and tool box talks shall be properly kept for at least five (5) years and be made readily available to Dubai Municipality OHS inspectors and other regulatory agencies for review and demonstrate compliance with pertinent UAE and DM regulations.

N. Emergency Preparedness

Employers should develop procedures and rescue plans for dealing with emergencies which could arise when using towers. Everyone involved should know what those procedures are and what they should do in the event of an emergency.

The rescue plan should be regularly assessed and updated where necessary. The rescue plan might consider the following:

Self-Rescue

In this situation where a person who is incapacitated or injured but is still capable of being able to descend safely under their own effort and using the built-in access. Some assistance may be necessary (e.g. holding open a trap door, but descent is made by the person using their own physical effort).

Assisted Rescue

Where, with the physical effort and help of others, the person in need of rescue may be safely assisted in a descent of the tower using the built-in access or other equipment.

Professional Rescue

Where the medical condition of the person or the condition of the tower, requires the assistance of a professional rescue team - that might be the emergency services.

In assessing the abovementioned methods of rescue consider at least the following:

- Medical condition of the person or persons being rescued and their needs in terms of First Aid or Medical Assistance - on the tower or after rescue;
- Condition and capacity of the tower – its stability and strength;
- Number and competency of persons needed to assist in a Self-Rescue or an Assisted Rescue;
- The need and capability to call the emergency services;

Periodic Mock Drills

As such, periodic drills should be required for those who have on-site responsibility for the rescue of a trapped person. These drills must include practicing the emergency controls for tower in use.

Organization shall maintain adequate number of first aiders and fire wardens as referenced in the respective legislations and requirements of Dubai Corporation of Ambulance Services (DCAS) and Dubai Civil Defence.

In case of any emergencies, dial – 998 or 999.

O. Medical Screening of an Employee

The employer shall make arrangements for the periodical medical surveillance of each employee involved in any work at height activity.

Since the assembly and use of a tower can be physically demanding, users should be physically fit and in good health and should, generally, not have problems with eyesight or hearing, heart disease, high blood pressure, epilepsy, fear of heights/vertigo, giddiness/difficulty with balance, impaired limb function, alcohol or drug dependency or psychiatric illness.

The employer shall maintain the Occupational Health Card as applicable as advised by Dubai Health Authority (DHA).

P. Monitoring, Inspection and Reporting

Mobile access towers are required to be inspected in accordance with manufacturers' instructions to ensure safety. The tower should be inspected during the following:

- Before being used for the first time;
- After any alteration or dismantling;
- After any event which is likely to have affected its strength or stability; and
- At regular intervals not exceeding seven days from the last inspection

Records of any inspection shall be properly kept and be made readily available to Dubai Municipality OHS inspectors and other regulatory agencies for review and demonstrate compliance with pertinent UAE and DM regulations.

6. REFERENCES

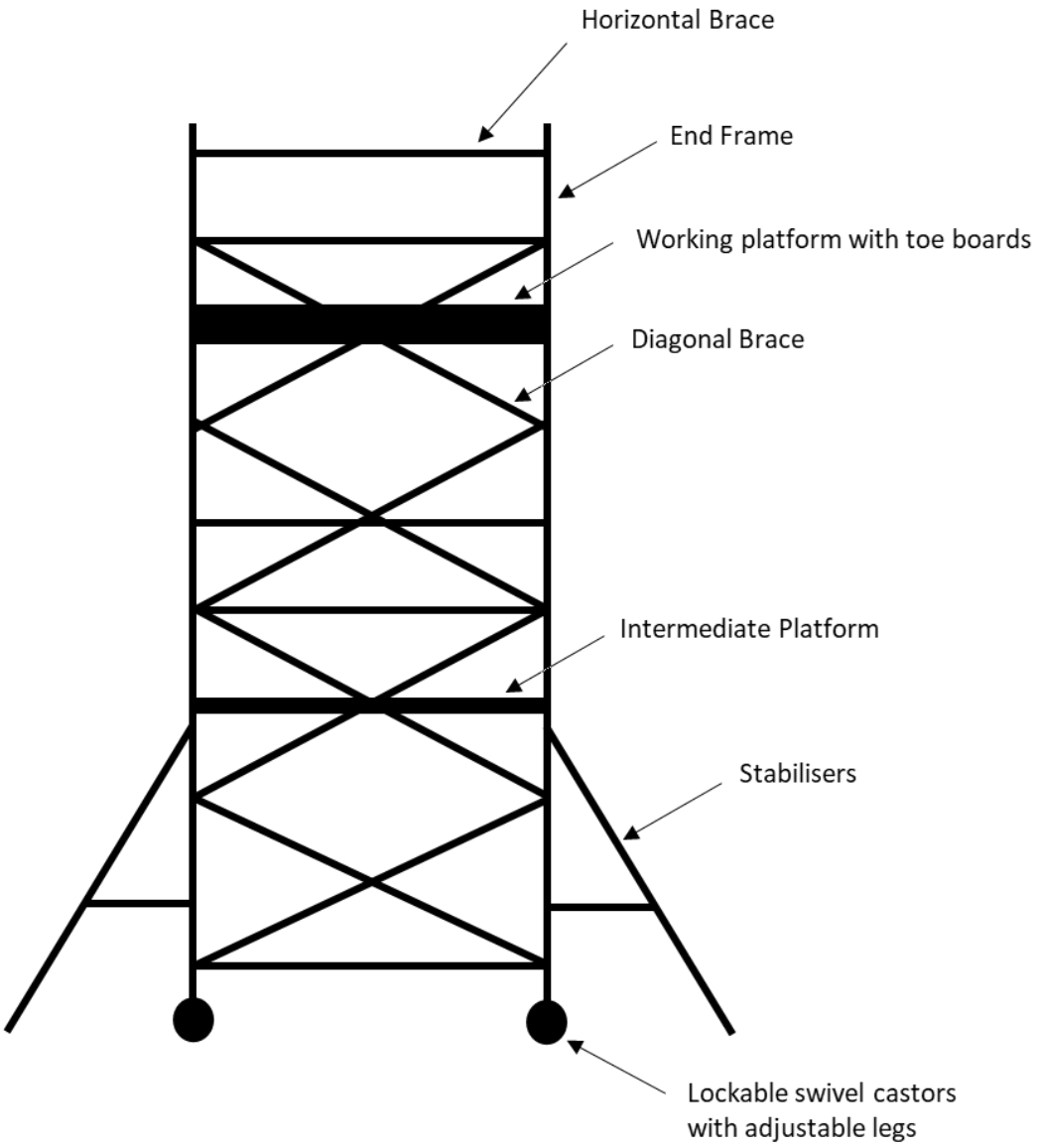
British Standard/European Standard: Mobile Access and Working Towers made of Prefabricated Elements. Materials, Dimensions, Design Loads, Safety and Performance Requirements (BS EN 1004:2004).

British Standard/European Standard: Mobile Access and Working Towers - Rules and Guidelines for the Preparation of an Instruction Manual (BS EN 1298:1996).

British Standard: Metal Scaffolding – Part 6: Prefabricated Tower Scaffoldsoutside the Scope of BS EN 1004, but Utilizing Components from such Systems – Specification (BS 1139-6:2014).

Prefabricated Access Suppliers' and Manufacturers' Association (PASMA): Operator's Code of Practice (Revision 12.6).

ANNEX A: MOBILE ACCESS TOWER COMPONENTS



ANNEX B: MOBILE ACCESS TOWER ACCESS TYPES

Vertical Ladder

Frame Access

Inclined Ladder

Stairway/Stair Ladder

ANNEX C: SAFE ASSEMBLY METHODS

Through the Trap Door – 3T

Figure showing safe assembly using the 3T method.

The assembler is positioned in the protected trap door platform.

Horizontal braces can then be fitted as guardrails as collective protection.

With the guardrails in place, the assembler can then safely ascend to the next platform level.

Advanced Guard Rail – AGR

Figure showing safe assembly using the AGR method.

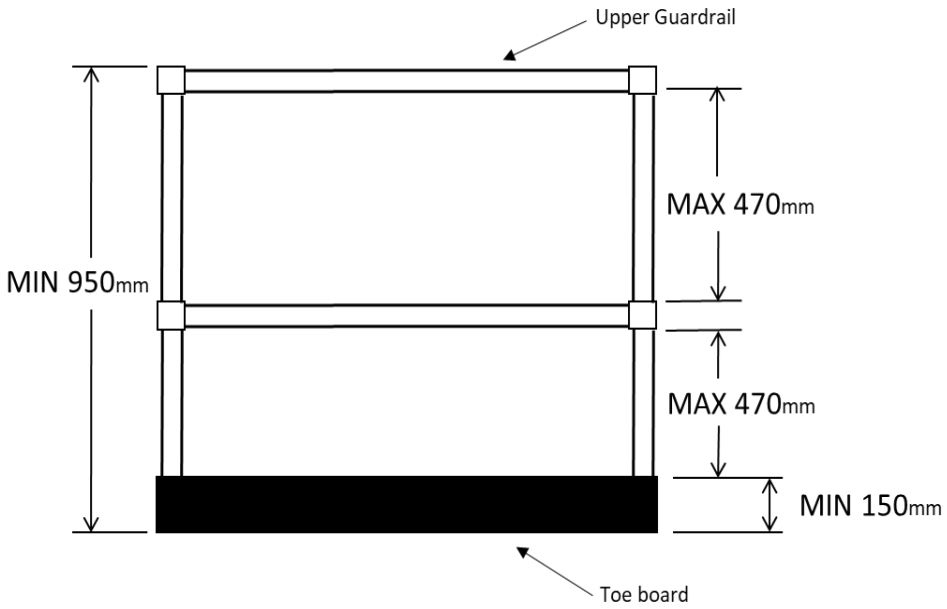
The assembler fits an AGR which can be classed as:

- Temporary (only used during assembly); or
- Permanent (fitted during use and remains part of the finished tower).

From the safe platform level, the collective protection for the level above can be fitted.

With the guardrails in place, the assembler can then safely ascend to the next platform level.

ANNEX D: GUARD RAIL MINIMUM DIMENSIONS



The diagram above shows the minimum guardrail requirements for a working platform level.

Intermediate platform levels do not require toe boards, unless required by risk assessment due to the nature of the work being undertaken. If toe boards are not present, the maximum opening must still be no greater than 470mm.

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