Technical Guideline for Mast Climbing Work Platform (MCWP)

1. INTRODUCTION

The use of Mast Climbing Work Platforms (MCWP’s) is increasing as the benefits for productivity, savings and safety when working on a façade are recognized and have become the latest access revolution. However, precaution and care should be observed to ensure safety while using this equipment.

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 operation of Mast Climbing Work Platforms (MCWPs) including types and terminology, assembly and dismantling, safety features and testing. This guidance document is recommended to be read in conjunction with Dubai Municipality’s Code of Practice for Managing Safe Work at Height.

2. SCOPE

This technical guideline shall apply to all establishments using mast climbing work platforms (MCWP’s) at their work in the Emirate of Dubai.

This guidance document does not cover the safe operation of mobile elevated platforms (MEWP’s), fixed cradles suspended from the top of high rise buildings and other types of elevated work platforms.
3. DEFINITION

**MCWP**
Mast Climbing Work Platform. Is a temporarily installed platform, with a single point of access typically at ground level, guided and moving along their supporting masts, where masts are usually tied to the building, used to move persons and their equipment and materials for the work carried out from the work platform.

**Base Frame**
Part of an MCWP that provides support for the mast and elevating assembly.

**Chassis**
Part of an MCWP that provides mobility and support for the mast and elevating assembly.

**Jacks or Outriggers**
Supports at the base frame level used to maintain or increase the stability of an MCWP within specified conditions. *(Note: these may be used for leveling)*

**Mast**
Structure that supports and guides the platform.

**Mast Tie**
Anchorage system used to provide lateral restraint to the mast from the building or other structure.

**Work Platform**
Vertical, traveling, part of the installation upon which the persons, equipment and materials are carried, and from which, work is carried out. *(Note: This is as opposed to an MCWP, which refers to the whole of the installation, among others, the work platform, mast, mast ties, base and chassis. The work platform includes the main platform and any platform extension.)*
4. GUIDELINES

A. Planning Method of Work and Risk Assessment

Before conducting any work at height, the employer shall conduct a thorough hazard identification and risk assessment in order to take the necessary steps and control measures to work safely. As a guidance, the employer shall refer to DM Code of Practices for OHS Risk Management and Managing Safe Work at Height.

The result of risk assessment can also be used to determine the safest and most practicable work equipment for the type of work that will be carried out considering the work area conditions it will be used in.

If the use of mast climbing work platform (MCWP) is determined to be the safest and most practicable work equipment for the activity to be carried out, sequencing activities shall be planned to avoid the presence of obstructions that could cause trapping, falling from the platform and other risks by adopting alternative working methods that avoid or reduce the risks when using a MCWP.

In assessing the risk, the employer shall consider the following minimum factors since there may be particular factors involved in the work to be undertaken which ought to be included:

- Fall (e.g. unguarded ends or removed guards; climbing from the platform to a building opening; inadequate platform material or plank bearing);
- Overloaded platforms;
- Failure to use the correct mast climber components or faulty configuration;
- Instability of the mast climber during dismantling;
- Equipment failure;
- Nearby electrical overhead lines.

In addition risk assessment should cover:

- Travelling to and from the work area;
- Accessing the work area;
- Work area lighting levels and provisions; and
- Working at height.

Hazard identification and Risk Assessment shall be conducted and recorded by a competent person(s) and appropriate knowledge of the work activity.
B.  Safe System of Work

A safe system of work (SSW) should be established and followed to ensure that work tasks can be carried out safely. Key elements of the SSW should be written down. This could take the form of a safety method statement as commonly used in the construction industry or any other appropriate record.

The SSW shall be based on risk assessment and shall include the following:

- Suitable MCWP to be used;
- Method statements;
- Safe operation and maintenance procedures for MCWP;
- Familiarization of the operators of the MCWP;
- Inspection and testing of MCWP;
- Control measures to be adopted;
- Provision of adequate and competent supervision at work site;
- Competence and training requirements for those involved in the work;
- Arrangements for the effective monitoring of wind speed;
- Communication arrangement with the competent person of the supplier;
- Provision of documents such as instructions, manuals, test certificates, load charts and other necessary documents; and
- Emergency arrangements.

The person who formulates the SSW shall:

- Understand the MCWP characteristics and the nature of the work to be carried out;
- Be capable of identifying site hazards that could lead to accidents; and
- Have the ability to communicate the results of their findings to those responsible for managing MCWP activities.

The SSW should be communicated to all persons involved in the planning and management of the work tasks. The hazards identified and control measures to be adopted should be communicated to those who supervise and carry out the work tasks.

All MCWP operators must follow the manufacturers guidelines for safe operational practices.
C. MCWP Supply, Handover and Familiarization

The MCWP manufacturer or supplier shall ensure the following before placing this type of equipment into service or handing over it over to the user/client:

- Equipment satisfies the relevant essential health and safety requirements;
- Technical file is available;
- Necessary information, such as instructions are available;
- Appropriate procedures for assessing conformity are carried out;
- Operating instruction document is clearly attached to the platform.
- Safety signage are prominently marked on the equipment.

The MCWP supplier is required to conduct a demonstration of the delivered equipment onsite to the trained operator. The person carrying out the demonstration must be trained and competent.

The demonstration provided is not considered as a training. Operator shall undergo formal competency training in accordance with the requirements of concerned government authority.

D. Pre-installation Planning

Ensure that all persons responsible for specifying MCWP’s, or planning an installation, or alteration to an installation are competent to carry out the work. Necessary competence shall be gained by appropriate training and relevant experience under supervision, and can be verified by entries in their record of attainment.

Plans shall be periodically reviewed in the light of changing site circumstances.

Site survey shall be conducted to include the following aspects:

- Establish primary purpose of MCWP that will be used together with any other additional requirements that will be provided with the equipment (e.g. prevention of falling debris);
- Length of work platform required and the work platform configuration, including any edge extensions, for the full duration of the installation;
- Mast positions;
- Maximum height of travel;
- Work platform loading capacity and method of loading;
- Access and egress of personnel and materials;
- Ground/supporting base conditions (levels and load bearing capacity);
- Area conditions around base with particular relevance if an MCWP is mobile and is to be moved while on site;
- Tie fixing point strengths and fixing point details on the structure, including suitable means of access to such points for installation and dismantling;
- Assessment of the strength of the structure both horizontally and vertically that will support MCWP's (This will be conducted by a competent person/engineer).
- Electrical hazards within the installation area of the MCWP that should be adequately shielded/moved;
- Windows or doors opening into path of work platform. Will an MCWP block any fire escape routes?
- Balconies or voids that necessitate special guarding methods or create special trapping hazards;
- Power supply and connection arrangements (if applicable) suitably located with adequate earth protection and power capacity;
- Extent of ground level fencing of MCWP requirements, when required by risk assessment;
- Access provisions to and from site for MCWP’s – details/obstacles. In addition suitable task lighting should be available for these operations
- Transfer clearances for mobile MCWP movement;
- Presence of any overhead hazards (electrical cables);
- Access provision for maintenance;

Clear method statement shall be prepared based on the result of the site survey. Method statement shall be comprehensive, job-specific procedure for the work to be carried out, and should include such information, explanations, detail and diagrams that all concerned with the authorization, installation and dismantling are clear of their specific duties. It should also include or make reference to the risk assessments for all activities connected with the delivery, site handling, installation, use, dismantling and collection of MCWP's.
E. Positioning

MCWPs shall only be sited on surfaces that are level, firm and capable to support all the weight that will be transmitted by the equipment, users, materials and other loads that it will be carrying. As needed, suitable load spreading plates shall be used under base that will be verified by a competent person.

Ensure to assess the strength of roof/floor members and spreading the load adequately, if MCWP’s are to be supported other than directly on the ground.

For MCWP’s that will be supported on cantilevered I-beam arrangements or “shelf brackets”, which are not designed and installed by the manufacturer, the base support should be evaluated and approved by a competent structural engineer.

Platform weather enclosures, tarps, signs, or any other construction which could affect the wind load on the platform should be authorized only by the competent person of the manufacturer/supplier.

If the MCWP is to be placed on concrete floors/roofs requiring additional structural supports underneath (e.g. underground car park levels), the following should be provided as evaluated and approved by a competent structural engineer:

• Calculations showing the specific ground load(s) to be shored for the configuration in question;
• The type, amount and load rating of the shoring posts;
• Shoring plan, detailing the exact position of each post, for each level, relevant to column lines.
• A means of making sure that the posts are protected against inadvertent removal or damage (e.g. signage, barriers, etc.).

Ensure that the base frame or chassis will provide adequate stability to the mast ties.

Mast(s) should be tied to structural members of the building unless adequate strength of alternative tie locations can be assured. The building or structure should be assessed by a competent person to ensure that it can withstand the loads imposed by MCWP’s and the load parameters shall be provided to the user competent person.
Foreseeable weather conditions (i.e. high winds) for the duration of the installation and dismantling of the MCWP should be taken into account.

MCWP should not be positioned where it will be strucked in the site by vehicles or materials.

Ensure to provide arrangements to avoid unauthorized MCWP usage or entry.

If designated fire escapes will be obstructed, ensure to communicate and seek approval from Dubai Civil Defence.

**F. Platform Access**

Safe and convenient means of access should be provided to the work platform. This should be from one level only. If a raised fixed landing is provided for access to the work platform, then care should be taken not to create a foot-trapping hazard. If this landing is at height and the possibility of falling exists then it should be protected when a MCWP is not at the access landing position.

In cases wherein MCWP is sited in a place accessible to the public/vehicles, the following should be provided:

- Fencing with at least 1.8 meter height around the platform access (at ground level). Ensure that the fencing is properly maintained and entry access is secured at all times.
- Arrangements to divert traffic and secure the area against vehicle incursion, if this is reasonably practical. If not, then suitable curbs, barriers, cones, lights, signs etc, shall be in place in accordance with the prepared method statement and with approval from concerned authority (e.g. Roads and Transport Authority)

Ensure safeguarding arrangements are in place to prevent any person of:

- Being trapped and/or crushed by the descending platform;
- Being struck by falling debris.
G. Installation

Ensure that all persons involved in installing or dismantling of MCWP are competent and adequately supervised.

All personnel carrying out MCWP installation or dismantling should be physically and mentally fit to undertake the work.

Ensure that all workers involved in the installation and dismantling process are wearing appropriate Personal Protective Equipment (PPE).

Ensure that the area wherein the MCWP will be installed is free from obstructions and is appropriately drained (not water logged).

Ensure that correct tools, equipment, and any safety measures such as exclusion zones around the work area are in place.

Personnel carrying out the installation activity shall follow safe systems of work (e.g. manufacturers' instructions, method statements).

Ensure that the wind speed is monitored. Wind speed of 12.7 m/s shall not be exceeded when installing and dismantling the equipment.

Installer should be aware of the safe working load (SWL) of the platform and take into account the number of persons, mast sections, ties and other equipment on the deck at any time. Ensure that the SWL is not exceeded at all times.

Installer shall seek advice from a competent person if any problems are encountered during the installation process or any concerns are identified. Installer shall not proceed from work if there are any doubts unless addressed by a competent person.

Ensure that the following are checked by a competent person after completion of installation:

- MCWP is not fouling the structure anywhere in its travel;
- All mast sections and mast ties are secure;
- All safety interlocks, including limit switches, are working correctly;
- All electricity supply cable is coiling or reeling correctly (if applicable);
- MCWP is responding correctly to the controls;
- MCWP has been thoroughly inspected/examined;
- Safe Working Load testing has been conducted;
- Correct rated load for the configuration is clearly and durably marked on the work platform;
- All guards are installed correctly;
- Handover documents are properly filled out and provided to the user;
- Site inductions are carried out to the workers that will be using the platform.

H. Alteration

Any modification to the installed MCWP or introduction of additional fixed loads (such as advertising signs etc) is not allowed without a reassessment by a competent authorized person (usually the supplier competent person). This should include a full study of the proposed modification, implications for safety during the remainder of the MCWP’s planned use, and its subsequent dismantling.

Ensure that the installers are in possession of the updated method statement and written authorization before starting any alterations to the installation.

I. Operation, Use and Maintenance

Ensure that all personnel that will be operating and using the MCWP are competent. In particular they should be able to:
- Interpret the maximum loading and load chart correctly
- Estimate with sufficient accuracy for safety, the weight of any loads that they might place on the work platform
- Lower the work platform safely, using the emergency descent device to the next safe exit level
- Carry out routine checks and inspections. Refer to Section Q.
- Awareness of wind speed criteria
MCWP user shall ensure that the operating instruction document inside the platform is available and clearly visible. This document shall be used as a reminder for any area of platform operation on which the user is unclear.

Whenever the MCWP will be transferred, the following minimum factors should be considered to avoid overturning:

- The load bearing capacity and evenness of the surface to be transferred over;
- The wind speed during this operation;
- Proximity hazards to the path of transfer, (e.g. high voltage lines, protrusions etc.);
- Whether the outriggers or stabilizers can be correctly positioned during the full distance of the transfer; and
- The frequency of movement, and the training and experience of those undertaking the transfer.

MCWP should not be transferred unless it is specially designed for that purpose and then only while the work platform is at its lowest position.

Ensure that clearances are sufficient and do not create trapping hazards. It should also be checked that windows cannot be opened into the path of the work platform and that warning notices are clearly displayed on balconies etc, where persons could lean into the path of the work platform.

Where two or more MCWPs are operating adjacent to each other or an MCWP is operating adjacent to a hoist, suspended scaffold, or other machine with separate controls, the minimum guaranteed clearance between possible shear points shall be at least 0.5 meter. Where this is not reasonably practicable additional guarding shall be provided to prevent entry of the upper body into the crushing zone.
Where MCWPs are operating against fixed scaffolding, or where there are possible whole body shear points between a work platform and the building or structure against which an MCWP is working, a clearance of at least 175 mm. shall be provided, where this is reasonably practicable. If it is not reasonably practicable to provide such a clearance, then physical safeguards against the trapping hazard should be provided.

Ensure to provide clear and durable warning notices shall be posted in order to draw attention to the shear hazard.

Ensure to check the cable does not snag or get trapped when operating the platform.

Always hand operate the control lever and give full attention to where the platform is moving, ensuring the clear travel of the platform.

Always watch out for obstructions such as cables, scaffold tubes, open windows etc. while the platform is moving.

Never climb off the platform when in raised position.

Keep all tools, materials, hands and feet etc. well inside the hand rails at all times.

Keep the platform free from debris and clean off after each day's work or more often under rubbish accumulating conditions.

MCWP should not be used for transferring of persons, materials or equipment into the structure, except in extreme circumstances when the transferring is deemed to be the most practical and safest means and formally approved by the supplier/competent person.

MCWP’s should not be used as shores or jacks.

Ensure that all barriers, enclosures, notices etc, should be properly maintained for the duration of the installation.

Ensure that adequate precautions are taken against risk from live electrical conductors to protect users of the equipment. Refer to section L.
Where MCWPs are to operate near to other construction equipment such as cranes, and especially where any part of the construction equipment or load can occupy the same space that is traversed by the work platform of an MCWP, suitable arrangements should be made to ensure safety. In particular, each operator should have an adequate field of vision and be able to communicate reliably with other operators, so far as this is reasonably practicable.

Work platforms should not be mounted in tandem or joined with bridges unless:

- The arrangement has been evaluated by a competent person and authorized to plan MCWP installations, with the approval of the manufacturer or other competent designer.
- At all times the control arrangements are such that the work platforms and bridges automatically remain in their correct relative positions, and are horizontal.
- Bridges are positively connected to both work platforms.
- All masts are parallel.
- The MCWPs are of identical design and type, or are designed for that purpose.

Extreme care must be exercised to operate manual lowering slowly or the emergency overspeed brake mechanism (overspeed brake) will be engaged.

Should overspeed brake be engaged, report incident to a responsible person. Caution should be exercised when approaching baseframe with emergency manual lowering, as electrical limit switches will not function under these conditions.

MCWPs should be maintained by competent personnel in accordance with the manufacturer’s instructions. Maintenance should be carried out at intervals that take into account the intensity of use, operating conditions, variety of operations and the consequence of malfunction or failure.

J. Safe Working Load (SWL)

MCWP shall not be overloaded beyond its Safe Working Load (SWL) and shall not be subjected to shock loading (i.e. the sudden increase or decrease of carried weight) at all times since these bad practices may cause accident and damage.

When loading the equipment, always refer to the manufacturers’ load chart and manual.

Always ensure that the load chart is available and clearly visible inside the platform and shall contain the following information (Refer to figure below):
• Maximum number of persons allowed on the equipment;
• Total maximum Safe Working Load (SWL) (i.e. the maximum distributed load that can be applied to the MCWP);
• Safe in-service wind speed;
• Fleet number of the equipment, (i.e. the unique identity of the MCWP);
• Site address;
• Equipment configuration (i.e. The length of MCWP components, e.g. Left wing, center span, right wing, extension boards, etc.).

K. Personal Protective Equipment (PPE)

All concerned personnel should always wear appropriate PPE. This might include: steel toe capped boots, hard hat, high visibility vest, etc. This will be determined by the risk assessment. Refer to DM OHS Technical Guidelines for PPE’s in www.dm.gov.ae under Health and Safety Department.

The work platform of an MCWP is provided with guardrails and toe boards to protect the users from falling. Consequently the use of full body harness is not required during use of MCWP’s unless any part of the guardrail system has been removed, in which case a risk assessment should be carried out to ascertain the need for, and specification of, fall restraint/fall arrest equipment. For guidance on the selection and use of personal fall protection system, refer to DM OHS Technical Guideline for Personal Protective Equipment — Fall Protection and industry best practices (e.g. International Powered Access Federation - IPAF).

Similarly, the risk of installers falling during assembly and dismantling operations should be assessed. Before attaching fall protection equipment to the work platform it is important that the in charge of the work and the user are both competent to determine the location and suitability of anchor points.

Ensure to provide the operator with necessary protection against wind chills while working at height.
L. Electrical Hazards

In case of emergency, the equipment should not be approached and keep others away. Keep calm and when inside platform, do not climb down and not jump. Call for emergency services.

Ensure to switch off transmitter antennae and all electrical power supplies or high voltage equipment are de-energized or it is protected with insulation and with electrical work permit issued by competent person or authority prior working with MCWP.

Working from or moving a MCWP in the vicinity of overhead high voltage lines can be extremely dangerous, and essential precautions must be taken. There may also be special rules established for particular sites.

On controlled sites, where MCWP’s have to pass under overhead electric lines, ground level barriers should be positioned and “goal posts” erected at the place where the equipment 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 operator 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 MCWP. This distance is 15 meters with overhead lines mounted on steel towers and 9 meters with lines mounted on poles of wood, concrete or steel. Also, refer to the existing safe distance requirements of DEWA or any concerned authority where work is conducted. The stricter requirement shall be followed. Seek further advice before commencing work

These distances are measured horizontally at ground level from a position vertically below the outermost conductor at the tower or pole position.

All overhead lines and other electrical apparatus should be treated as live unless declared “dead” and “Safe” by DEWA (or other line operator).
### M. Wind Speed

Maximum design wind speed information shall be marked prominently on the equipment (Refer to section J figure) and shall also be available in the safe operating procedure. Typically the maximum wind speed at which a MCWP can be operated, is 15.5m/s for a tied platform and 12.7m/s for a free-standing or mobile platform.

Ensure not to operate the equipment beyond the designed maximum wind speed. Platform should be returned to ground level and parked until the weather conditions improve.

Ensure that the wind speed is measured prior working at height. It is recommended to use an anemometer for reliable measurement.

Safe precautionary measures shall be observed when working around buildings, rooflines or object corners due to wind funnelling.
Safe precautionary measures shall be observed when using large sheets of material or anything with a large surface area in the MCWP platform.

Safe precautionary measures shall be observed when working in areas that may be affected by local high wind speed such as aircraft slipstreams at airports and high sided vehicles on motorways.

**Note:** Wind speed increases with height and may be 50% greater at a height of 20 meters above ground level.

### N. Dismantling

Before dismantling an MCWP, refer to section G for applicable requirements and the below requirements.

Ensure that there have been no significant changes from the original installation that might adversely affect the safety of the dismantling operation (e.g. missing or loose mast ties or fixing bolts, changed ground conditions or alterations to the base frame).

Ensure that there are no visible signs of stress or weakness in the MCWP or ties which might affect the safety of the dismantling operation.

Ensure that the base frame or chassis will provide sufficient stability, in all directions, when the last mast tie has been released.

Ensure that the maximum number of mast ties and additional equipment that can be carried by the work platform, and their required distribution such as not to exceed the rated load, is known by all those taking part in the dismantling.

During the dismantling, special care should be taken to ensure that the load building up on the work platform from dismantled components does not exceed the rated load.

Ensure that all components of the equipment are safely loaded into the transport vehicle and the worksite is clear of any debris and surplus equipment.
O. 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. Accordingly each employee shall be trained and certified as per Dubai Municipality requirements.

Apart from general training, all of the concerned employees are to be trained on the organizations' safe operating procedures (SOP’s) for their respective activities, MCWP control familiarization, characteristics, safety devices, decals and emergency preparedness and response including rescue for the equipment that they will be authorized to operate.

Ensure that all persons using the MCWP must have had user induction briefing from a competent person (i.e. IPAF Demonstrator). The induction briefing should never take less than half an hour. Induction can only be successfully achieved with active participation.

Ensure prior start of any working at height, workers involved are instructed thru tool box talk.

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.

Refer to Annex C for minimum topics that shall be included in MCWP training and induction briefing.

Site Management

Managers with responsibility for work where people on the platform may be trapped between the platform and objects in the work area should have knowledge of the factors that should be considered before selecting a MCWP for use.

Supervisors

Supervisors should be instructed in the hazards, causal factors, and control measures identified in the task specific risk assessment for the work that will be carried out. They should be familiar with the work plans and take part in regular on-site emergency lowering drills.
**MCWP Operators**
- Be competent to operate the MCWP in the working conditions to which they are exposed;
- Be instructed in local hazards and site rules;
- Have attended a recognized training course; and
- Be familiar with the type and model of MCWP that they are authorised to operate.

Those who use Mast Climbing Work Platforms are required to be competent and trained to an internationally recognized standard. It is important to ensure that the operator has received training in the correct type of MCWP that they will be using.

**Rescuers**
- Be competent to lower the MCWP platform using the ground/emergency controls in the work situations to which they are exposed;
- Be instructed in local hazards and site rules;
- Be familiar with the rescue procedures for the type of MCWP they are authorized to operate; and
- Be aware of what to do if the load control has tripped and/or the emergency control has been activated in the platform.

Rescuers at ground level do not need to be trained as MCWP operators but they must be trained by their employer and be competent to carry out rescue operations. They should be familiarized with the safety devices on the MCWP in use, its emergency lowering systems and ground controls. They should check the emergency lowering functions with the operator during the daily pre-use checks.

Rescuers should be trained in the procedures to follow when rescuing people and take part in on site emergency lowering drills.

**Training Providers**
Those who provide training on MCWP’s, should be able to demonstrate that their training activity – facilities, equipment, instructor qualifications and CPD, instructor/trainee ratio and course content are subject to independent assessment and in accordance with applicable government requirements and international standards. Records should be kept of the training provided.

All training shall be repeated every two years as a minimum. However, organizations can have better periodicity to ensure staff knowledge is up to date at all times considering changes.
MCWP Operators' Health and Fitness

Since the safe use of MCWP's requires proper and thorough understanding of safety notices and manufacturer's instruction manual, literacy and language comprehension are important requirements for any MCWP user.

Similarly, since the assembly, use and dismantling of MCWP's can be physically demanding, involved personnel 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 or vertigo, giddiness or difficulty with balance, impaired limb function, alcohol or drug dependence or psychiatric illness.

If the worker has any problems with literacy or language comprehension or have any doubts about his/her fitness to use MCWP's, these must be brought to the attention of the workers' employer/supervisor.

This need not preclude the worker from using MCWP's, provided that the employer conduct an assessment and is able to put into place adequate measures, to take account of any difficulties the worker may have.

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

P. Emergency Preparedness

Rescue Plans

Suitable rescue plan must be developed to ensure that emergency recovery can be carried out safely and quickly in the event of an operator or anyone else becoming trapped between the platform and an adjacent object.

Ensure that there should always be a trained person at ground level who is able to take action in the event of an emergency while a MCWP is in use and trapping risks are present.

MCWP operators, supervisors and others involved should be briefed on and practice the emergency procedures to follow if someone becomes trapped.
The location of the operator’s instruction manual should be identified in the emergency plan so those people who are authorized to operate the ground and emergency controls can refer to it.

This can be used in conjunction with existing manufacturer’s symbols on the MCWP to aid location of the emergency controls.

**Emergency Drills**

Ensure to conduct periodic emergency drills including rescue. Ensure to include in the drill the practice of using ground and emergency controls specific for the equipment being utilized.

The organization shall maintain adequate number of first aiders and fire wardens as referenced in respective requirements of Dubai Corporation of Ambulance Services (DCAS) and Dubai Civil Defense (DCD).

In case of any emergency call - 998 or 999.

**Q. Monitoring and Inspection**

Ensure that a competent person inspects the entire equipment both before and after use which includes the platform, power source, all working parts, all safety systems and the structure in conjunction with the manufacturer’s manual. Refer to Annex B for sample pre-use checklist and Annex E on information on standard safety features provided for MCWP’s.

Ensure to conduct routine inspection/services by a competent person, usually provided by the MCWP supplier commencing upon handover of the equipment. However, responsibility for maintenance of the equipment (duty of care) is that of the user’s employer.

Ensure that all MCWP’s are inspected every six months by an EIAC accredited third party company. The third-party engineer must inspect the MCWP through visual and function testing as required and not rely on the operator for the function tests.

Ensure that supervisors are instructed in and supplied with safe system of works (SSW) for the activity that they are expected to control.
Supervisors shall monitor the work and provide advice for the review and revision of the risk assessments and SSW as the work progresses.

Organization may conduct periodic inspections/audit to verify implementation of appropriate control measures based on risk assessment and this technical guideline.

Ensure that any unauthorized repairs and adjustments are not carried out. In case of any revealed defect, the equipment should be isolated, tagged and reported to the concerned person. The MCWP should not be used and report the equipment as defective.

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.

5. REFERENCES


ANNEX A: MCWP CATEGORIES AND CONFIGURATIONS

MCWP's are mainly categorized into two:

- Free-standing (also known as Mobile Platforms); and
- Tied Platforms.

Both categories can have either Single or Twin Mast configurations installed.

A. Single mast configuration

B. Twin mast configuration

Nowadays, Free-standing MCWP's have very limited applications and most of the applications require Tied MCWP's.
ANNEX B: SAMPLE PRE-USE MCWP CHECKLIST

<table>
<thead>
<tr>
<th>Checklist Items</th>
<th>Yes</th>
<th>No</th>
<th>Remarks</th>
</tr>
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<tbody>
<tr>
<td>1. The platform and its equipment have not been altered by unauthorized persons since last operation.</td>
<td>☐</td>
<td>☐</td>
<td></td>
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<tr>
<td>2. The mast and tie assemblies are secure and unaltered.</td>
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<td>☐</td>
<td></td>
</tr>
<tr>
<td>3. Condition of area beneath ground frame or chassis is clear and secured.</td>
<td>☐</td>
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<td></td>
</tr>
<tr>
<td>4. There no obstacles are in the platform’s movement path.</td>
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<tr>
<td>5. All handrails and guards are in position and secure.</td>
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<td>6. Area below platform is suitably fenced-off.</td>
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<td>7. Platform is clear of all unnecessary debris and materials.</td>
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<tr>
<td>8. Power supply is available and undamaged.</td>
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<tr>
<td>9. Direction of platform movement is correct and smooth.</td>
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<tr>
<td>10. Platform stops promptly, level and without slipping when directional control is released</td>
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<tr>
<td>11. Platforms’ limits switches are in good working condition and functioning properly.</td>
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<td>12. All instruction notices are present and legible.</td>
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<td>13. There is a minimum of 2 people on the platform all times.</td>
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<td>14. The maximum safe working load is not exceeded.</td>
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<tr>
<td>15. There are no obstacles in path of platform when moving.</td>
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<tr>
<td>16. The power cable does not get caught or snagged when moving.</td>
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Note:
In case of any item has “No”, please inform the competent person/supervisor/employer and ensure its rectification at the earliest.
ANNEX C: SCOPE OF MCWP TRAINING

The following minimum topics shall be included in MCWP training and induction briefing.

i. Route and features of electric cables from power supply to platform, including:
   - Free and safe cable running - avoiding areas where the cable will get caught or damaged.
   - Socket connections to platform - point out where the power is supplied to the drive unit.
   - Arrangements to support cable weight must be used to prevent the power plug being pulled out.
   - Plug connection to the mains source - explain where power cable attaches to the power loom on building through wall or trailing socket.
   - Ensuring power is turned on at the source - explain how to supply and isolate power.
   - When operating the platform, to check that the cable does not snag or get trapped. We recommend that one person supervises the cable at all times when the platform is being driven.

ii. Stability of base frame, including:
   - Checking levelling jack locking nuts are secure and base frame is level.
   - Checking castors are clear of the ground.

iii. General arrangements of decks, guardrails, guards and access steps including:
   - Inspection of 'R' clips and pins along the whole underside of the platform.
   - Inspection of guardrail connections on both front and back of the platform, ensuring they are fully located and secure.

iv. Location and function of electrical safety limit switches, if fitted, including:
   - Gate switches.
   - Top “up” limit and bottom “down” limit.
   - Ultimate limit switch on safety brake and the importance of this limit.
   - Ultimate limits, its locations and functions.
   - Levelling limits, correct setting of levelling rods.
   - Overload limits within motors, outline verbally.

v. Ensure all relevant signs and decals are seen and are understood i.e.
   - Load chart is clearly visible and fixed to mast guard.
   - Operating instructions are clearly visible and fixed to mast guard.

vi. Explanation of the load chart details, including:
   - What evenly distributed means – i.e. this is the maximum load that can be supported in the specified area e.g. left wing, centre span or right wing.
   - What concentrated means – i.e. this is the maximum load that can be supported as a point load in the specified area of the platform.
• Any load restrictions. For example on platform extensions, this is the maximum load that can be supported on the auxiliary extensions attached to the main platform.

vii. Explanation of wind restrictions, including:

• What out of service wind means - this is the wind speed above which the platform cannot be operated.
• Definition of in-service wind.
• The highest wind speed that the platform can be normally operated.

viii. Explanation and short demonstration on how to operate the platform including:

• Directional controls (dead man type). Point out that the platform will not move unless the user provides the necessary input signal and the platform will stop as soon as the input signal is removed.
• Self-levelling mechanism and override buttons (for twin platforms only).
ANNEX D: TYPICAL TIES AND ANCHORS USED IN MCWP INSTALLATION

Tie frames

Ties are inserted at intervals during the erection of the mast in order to secure the mast to a suitable structure, typically to the steel frame or to the concrete floorslab in a building.

The “tie assembly” is comprised of a “tie frame” that connects directly to the mast and two “tie legs with fixing plates”.

The tie legs are anchored to the building using fixings at one end and connected to the tie frame at the other, either using standard swivel type scaffold couplings or manufactured designed fittings.

Finally, a third sway piece is connected across both tie legs to provide additional rigidity.

Examples of tie frame configuration:
Standard Fixings/Anchors

There are two types of standard fixings also referred to as anchors, used to connect to concrete.

Mechanical Expansion Anchors

A hole is drilled in the floorslab, the anchor is inserted through the fixing plate of the tie leg and into the hole. A calibrated impact gun, or similar, is then used to tighten the anchor to the required setting torque. During tightening, the expansion wedge moves up the threaded bolt or rod and forces the wings of the expansion sleeve outward producing the anchoring force.

Example of expansion anchor:

![Expansion Anchor Image]

Chemical Resin Anchors

A hole is drilled in the floorslab, the resin is introduced into the hole either as a nozzle mixed two part resin or as a resin capsule (see figure below). The anchor rod is then inserted with a turning motion into the resin and left to set. The tie leg fixing plates can then be attached to the embedded rod, after a suitable curing time, which may be temperature dependent.

![Chemical Resin Anchors Image]
ANNEX E: STANDARD MCWP SAFETY FEATURES

The following are the standard safety features provided to Mast Climbing Work Platforms (MCWP’s):

Limit Switches (Top, Bottom and Ultimate)

There are an array of electrical limit switches fitted to MCWP’s in order to prevent unsafe situations from arising.

In terms of the platform’s movements up and down the mast, there are Top Limits, Bottom Limits and Ultimate Limits to prevent the platform from exceeding the boundaries of travel.

These limit switches make contact with striker plates fitted to the mast sections and electrically isolate the platform to prevent travel beyond the striker plate.

Mast Overrun/Proximity Device

Each platform is fitted with a Mast Overrun/Proximity Device, which is primarily for mast installation purposes. It prevents the platform driving off the top of the mast in the absence of a Top Mast/Top Hat. However, it also acts as a backup system for the top mast limit switch and electrically isolates the platform power in the event that the mast section above the platform is not detected.

Automatic Levelling System

In the twin configuration all MCWP’s will have a levelling system activated in order to maintain a horizontal platform during travel. In the event that the platform begins to move out of level the center span deck modules activate the limit switches.
Gate Interlock Limits

Most MCWP’s have fitted Gate Interlocks. These limit switches electrically isolate the platform’s drive system preventing operation of the platform while the access gate is opened. All access gates must only open inwards.

Manual Descent

In the event of a loss of power while the platform is in an elevated position, all MCWP’s are fitted with Hand Brake Release systems to manually release the primary braking system and allow the platform to descend.

Extreme care must be exercised to operate manual lowering slowly or the emergency overspeed brake mechanism (overspeed brake) will be engaged (if fitted). Should overspeed brake be engaged, emergency release by others will be required, and the incident should be reported to the responsible person.

While using emergency manual lowering, caution should be exercised when approaching the baseframe, as electrical limit switches will not function under these conditions, and there is a risk of crushing personnel or equipment under the platform.
Overspeed Safety Device

In the event that the primary braking system has failed and the platform begins to free-fall, a gravity activated braking system will engage to prevent the platform descending to the ground in an uncontrolled manner. Dependent upon the manufacturer of the MCWP, design specifications can differ. Activation of a platform's overspeed brake should be reported to the appointed person on-site. Only a competent person (i.e. a Service Engineer) should undertake the resetting of the overspeed brake after it has been activated.

Top Mast/Top Hat

In order to prevent the platform from driving off the top of the mast the Top Mast section is fitted with a half rack, or no rack which will not permit the platform to reach the top of the mast. In addition, some Top Mast sections also incorporate a permanent welded top limit striker plate to activate the electrical limits switch mentioned earlier and isolate the power before reaching the top of the mast. The top mast section may also be painted a distinctive colour in order to facilitate simple visual inspection.
Further information is available from:

Health and Safety Department
Dubai Municipality
Tel: 800900
HSAware@dm.gov.ae