



**Dubai Municipality
Health and Safety Department**



**Technical Guideline on
Usage of Rope Access System**

DM-PH&SD-GU35-URAS2

 GOVERNMENT OF DUBAI	Organization Unit:	Health & Safety Department	الوحدة التنظيمية:	 بلدية دبي DUBAI MUNICIPALITY
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1. INTRODUCTION

The use of rope access systems have seen significant increase in use due to the rapid construction of structures and groundbreaking designs of building exterior facades over the past years. This type of access system is primarily used during the construction phase and operational life of the structure for cleaning and maintenance activities.

Rope access is a safe method of working at height where ropes and associated equipment are used to gain access to and from the work position, and to be supported there.

The advantage of using rope access mainly lies in the safety and speed with which workers can get to or from difficult locations to carry out their work, often with minimal impact on other operations and surrounding areas. In addition, the workers' total man-hours, perceived level of risk for a task (man-at-risk hours) and related set-up/operational expenses are less when compared with other means of access.

However, rope access operations should only be undertaken by specialist and certified companies and personnel (e.g. IRATA audited). The companies which provides operational services, are subjected to checking in both technical and quality assurance aspects of procedures and equipment and shall comply with UAE and Dubai Municipality regulations such as Federal Law No. 8 of 1980, DM Local Orders 61 of 1991 and 11/2001 which requires the employers to provide a safe work area.



2. PURPOSE

The purpose of this technical guideline is to provide the recommended working practices for the safe operation of rope access work. This guidance document is recommended to be read in conjunction with Dubai Municipality's Code of Practice for Managing Safe Work at Height.

3. SCOPE

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

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4. DEFINITION

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

Anchor/Anchorage

Place, fixing or fixture to which an anchor line is connected.

Anchor Device

Assembly of compatible elements, which incorporates one or more anchor points or mobile anchor points that is intended for use as part of personal fall protection system, is removable from the structure.

Anchor Line

Flexible line connected to at least one reliable anchor to provide a means of support, restraint or other safeguard for a person wearing a harness in combination with other devices. *Note: An anchor line may be a working line or a safety line.*

Anchor Point

Point at an anchor used for the connection of personal fall protection equipment.

Ascending Device

Anchor line device used primarily to assist progression along an anchor line and for positioning the rope access technician on it, which, when attached to an anchor line of appropriate diameter, locks under load in one direction and slips freely in opposite direction.

Back-up Device



Anchor line device for a safety line, which accompanies the user during changes of position or allows adjustment of the length of the safety line and which locks automatically to the safety line, or only allows gradual movement along it, when a sudden load occurs.

Competent Person

Designated person suitably trained or qualified by knowledge and practical experience to enable them to:

- Carry out their required duties at the level of responsibility required of them;
- Fully understand any potential hazards related to the work under consideration;

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- Detect any technical defects or omissions in that work, recognize any implications for health and safety, and be able to specify appropriate remedial action as necessary.

In other words, a competent person should be able not only to discover defects but tell what effect they are likely to have. Safety in rope access work critically depends on high levels of competence in all staff.

Descending Device

Manually-operated, friction-inducing line device which, when attached to an anchor line of appropriate type and diameter, allows the user to achieve a controlled descent and a stop with hands off anywhere on the anchor line.

Device Lanyard

Lanyard used to provide a link between the user's harness and the anchor line device.

Deviation

Redirection of the path of the anchor lines from the anchor points to avoid abrasion and other potential causes of damage to the anchor lines or to provide more accurate access for the rope access technician.

Dynamic Rope

Rope specifically designed to absorb energy in a fall by extending in length, thereby minimizing the impact force.

Maximum Rated Load

Maximum mass of one or more persons, including tools and equipment carried, with which a component of a rope access system can be used, as specified by the manufacturer.



Proof load

Test load applied to verify that an item of equipment doesn't exhibit permanent deformation under the load, at that particular time.

Safe Working Load (SWL)

Designated maximum working load of an item of equipment under, specified conditions.

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Re-anchor

Anchor installed at a distance (unspecified) from the anchor point(s) used for the first attachment of an anchor line, to which the anchor line is additionally attached, and which is not a deviation anchor or an anchor placed simply to maintain the position of an anchor line

Rigging for Rescue

Establishing a rescue system which enables workmate retrieval to take place without the need for a rescuer to descend or ascend to the position of the injured person.

Rope Access

Method of using ropes, in combination with other devices, by which a user descends or ascends a working line to get to or from the workplace, and for work positioning, while further protected by a safety line, such that both lines are connected to the user's harness and separately secured to a reliable anchorage in such a way that a fall is prevented or arrested.

Working Line

Anchor line used primarily for access, egress, work positioning and work restraint.

Safety Line

Anchor line provided as a safeguard to protect against falls if the rope access technician slips or if the primary support anchor or positioning mechanism fails.

Safety Method Statement

Document prepared by the employer describing how a job should be undertaken to ensure that any risks to the health and safety of the workers are minimized.



Work Positioning

Technique that enables a person to work supported in tension or suspension by personal fall protection equipment in such a way that a fall from height is prevented.

Work Restraint

Technique by which the user is prevented from reaching zones where the risk of a fall from a height exists.

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5. 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 establish whether rope access is an appropriate method for the work.

For all work at height, the most intrinsically safe means of access should always be considered first. Other methods of access, such as cleaning from inside, suspended access equipment or mobile platforms, may offer a credible alternative.

In general, the most effective control is hazard elimination and if this is not reasonably practicable, then the employer should take the necessary steps and measures to control the risks to an acceptable level. Code of Practice for OHS Risk Management and Code of Practice for Managing Safe Work at Height shall be referenced for appropriateness of the usage of rope access.

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:



- Duration of work;
- Rope and accessories to be used;
- Electrical lines and other overhead hazards;
- Weather condition;
- User.

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

Based on the conducted risk assessment, a safe system of work (SSW) should be established and followed to ensure that rope access operations 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.

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The SSW shall include the following:

- Suitable equipment to be used;
- Method statements;
- Safe operation and maintenance;
- Inspection and testing of rope access system;
- Arrangements for control and communication;
- Provision of adequate and competent supervision at work site;
- Selection of people with the necessary level of competence and training;
- Arrangements for the effective monitoring of wind speed;
- Provision of documents such as inspection reports, test certificates, and other necessary documents; and
- Emergency and rescue arrangements.

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 rope access technicians must follow the manufacturers' instructions of the supplied equipment for safe operational practices.



C. Personnel Responsibilities and Competencies

The employer or company management shall appoint a competent person(s) that will be responsible for managing all aspects of rope access work. The appointed person(s) must possess the necessary experience, training and qualification in the type of work the company plans to undertake.

Similarly, designated rope access supervisors shall be competent since they be required to directly oversee and direct work in progress on all job sites.

In addition to the general health and safety responsibilities of concerned personnel stated in Chapter 4 of Code of Practice for Managing Safe Work at Height, below are the specific responsibilities and requirements for rope access operation.

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Rope Access Manager (Appointed Person)

Managers must have practical experience of various work methods wherein they are capable to define the most suitable safe system of work in the worksite. Necessary management skills shall include the following:

- Create and operate a general system for management of rope access operations which includes compliance with the requirements set out in this guideline, COP for Managing Safe Work at Height and related DM OHS technical guidelines available in www.dm.gov.ae;
- Understand and recognize risks arising from different work situations;
- Create and properly use general and task-specific method statements;
- Implement procedures for proper selection, inspection and care of rope access equipment;
- Compile method statements and ensure proper application on-site;
- Decide on specific working methods for rope access techniques and work tasks;
- Ensure supervision, work equipment and personnel are appropriate for the work to be done;
- Monitor and review effectiveness of working methods.



Rope Access Supervisor

Every work site shall be properly and adequately supervised by implementing a safe working system for a particular worksite;

Supervisors should be fully conversant with the access techniques required for each job and should be aware of any limitations of those techniques. Supervisors should also be competent in rescue techniques for both general and specific situations and must have the appropriate interpersonal skills to perform their duties effectively. In addition the supervisor shall have the following skills:

- Trained and holding a valid IRATA Level 3 Rope Access Technician certificate;
- Implement working methods set out by the manager;
- Understand risks set out by different work situations;
- Execute and direct all access methods required by a particular work task;
- Plan for (and be able to carry out) any necessary rescue for particular work situation;
- Have experience of and competence in worksite and personnel supervision;
- Eliminate or control hazards to technicians or third parties;
- Properly manage all access and work equipment on-site;
- In possession of valid first aid at work certification;
- Shall complete the “Certified OHS Representative (Person in Charge)” scheme from a certification body approved by Dubai Municipality;
- Secure a Dubai Health Authority (DHA) medical fitness certificate indicating that the supervisor is not

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suffering from height phobia (acrophobia).

Rope Access Technician (Worker)

Rope access technician should be at least 18 years of age and normally with a maximum weight of 100 kg.

Personnel involved in working at height should be physically fit and in good health and should, generally, not have the following medical conditions/impairment:

- Heart disease/chest pain;
- High blood pressure;
- Epilepsy, fits, blackouts;
- Fear of heights/vertigo;
- Giddiness/difficulty with balance;
- Impaired limb function;
- Alcohol or drug dependence;
- Psychiatric illness/undergoing counselling;
- Diabetes.

The technician is required to undergo regular medical examination to ensure physical fitness and secure a DHA medical fitness certificate indicating that the worker is not suffering from height phobia (acrophobia).



Rope access technicians shall ensure that they are holding a valid IRATA Level 1 or 2 Rope Access Technician certificate and must have the following minimum level of practical skills needed to conduct rope access work:

- Controlled descent;
- Use of back-up system;
- Short ascent;
- Change from one rope to another;
- Knots, elementary safe rigging, rope management;
- Selection of safe anchor points;
- Equipment care and pre-use checks;
- Safety of third parties;
- Elementary rescue.

Before starting any rope access job, all technicians shall be competent to:

- Properly inspect access equipment before every use;
- Understand all risks arising from the access method and work task;
- Use all access techniques required by a worksite.

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D. Access Equipment Selection

All equipment should be appropriate to its application. All rope access equipment selected and purchased shall be compatible and in compliance with applicable conformity standards of Emirates Authority for Standardization and Metrology (ESMA) and/or international standards such as BS, EN, ISO, ANSI, etc.

All access equipment should be supplied with a valid certificate of conformity, providing the specifications and performance characteristics where appropriate. If there is any doubt as to the suitability of equipment, seek necessary advice from the competent person of the manufacturer/supplier.

Equipment should be individually marked in a way that does not impair its function. Equipment should be properly maintained and stored and should be traceable back to the manufacturer or supplier, whom should have traceability for their last inspection record.



In addition, rope access equipment shall comply with the following key requirements:

- The harness should be a full body type conforming to the appropriate international standard and be of a type suitable for operations following a twin rope working system;
- Descending devices should be of a type that will stop if the user loses control or allow only a slow, automatically controlled descent in the hands-off position;
- The back-up device should be capable of withstanding any foreseeable forces resulting from the rope access activity, without catastrophic damage to the line or device and should perform its function without any intervention of the technician.
- The back-up device should be trailing, it should be a fall arrest device and it should not/could not be defeated by the user (Type EN12841-A fall arrest device or equivalent).
- Rope should be of kernmantle construction, semi-static (low-stretch) type, of a diameter between 10.5 mm and 11.5 mm, in accordance with EN 1891.
- Dynamic mountaineering rope (EN 892) is not suitable for suspension or as a back-up rope but may be used for personal lanyards (cows' tails).

Note: The above requirements gives examples of appropriate standards, which are intended to assist users in selecting suitable equipment for a given task. These standards contain specific test criteria that equipment must meet as a minimum in order to claim conformity to that standard.

Some standards may contain information or requirements that differ from the detailed recommendations given in this technical guideline. Where such differences occur, which result in a lower performance and/or a lower

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level of protection, it is recommended that users continue to follow the higher level of protection guidance. Where other UAE standards or legislation require a higher level of performance and/or protection than the requirements specified in this document, the higher level should be followed in conjunction with the recommendations in this guidance note.

E. Operation and Use

Ensure appropriate access method is determined and that there is the appropriate level of qualified supervision and technicians, along with the correct level of equipment to undertake the task and in the event of any incident, to undertake any rescue procedure independently.

All technicians shall be wearing the necessary personal protective equipment (PPE) appropriate to the work situation and conditions. For guidance on various PPE's such as personal fall arrest/restraint equipment, protective clothing, head protection, hearing or eye protection, gloves, safety shoes, etc., refer to DM OHS Technical Guidelines for PPE's in www.dm.gov.ae under Health and Safety Department.

Employer shall ensure that the provided full body harness fits the worker, correctly fitted when worn and is adjustable to minimize injury to the user if a fall occurs, and is so designed, installed and used as to prevent unplanned or uncontrolled movement of the user.



Rope access system shall be thoroughly inspected and certified by Emirates International Accreditation Center (EIAC) accredited third party company, once every six months, during every installation or every change of location/modification, etc.

Technicians of rope access system shall read the manufacturers' instructions or company's SOP's/method statements to ensure proper and safe use.

Ensure that the safe working loads of the rope access system and its accessories are checked and not exceeded at all times.

Rope access system shall always be securely attached to at least two independently anchored systems and each anchor point and the means of attachment thereto is suitable and of sufficient strength and stability for the purpose of supporting any foreseeable loading (e.g. reference BS 8610, BS EN 795, IRATA Requirement – 15 KN minimum). Refer to Section 5F for anchorage.

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Technician shall be connected to both the working line and the safety line thru an appropriate full body harness, even if a work seat is being used. Measures should be taken to avoid inadvertent detachment from the working and safety lines.



Ensure that the ropes and other components are properly arranged/protected to avoid abrasion and are not in contact with chemicals, hot surfaces, sharp objects or exposed to wet environment and direct heat of sunlight.

Back-up device should be kept as high as possible to prevent or limit a fall (limited free fall).

All technicians shall be provided with all the suitable tools, equipment or materials needed while working at height.

Steps should be taken to ensure that any work equipment (e.g. cleaning tools, buckets, squeegees, etc.) is properly secured and used safely. All items must be attached to avoid falling and large items (over 8 kg) should be suspended on an additional haul rope. Tool bags or pouches may be appropriate for some work.



Ensure that suitable and sufficient steps are to taken in the workplace to prevent any worker from falling while using a rope access system.

Ensure to identify all necessary movements of the technician and the materials and tools/equipment needed to perform the planned task.

Ensure that the technician is provided with safe access to and egress from work position, (e.g. flat roof, clear pavement).

Ensure that the anchor lines of two or more workers are not crossing or tangling.

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Establish controls to ensure that the anchor lines and rope access components are functioning properly and not hindered, clamped or knotted which may affect the safety of the technicians.

Connection to the rope access system should be in an area where there is no risk of a fall from a height, unless there is protection by other means.

Exclusion zones should be established as appropriate. This may require zones at locations other than top and bottom of the rope access work.

All concerned personnel shall be provided with an efficient communication system (e.g. mobile phone, two-way radio, whistle etc.).

Ensure to provide at least two attachments to the structure when aid climbing.

Ensure technicians involved in aid climbing are specifically trained and qualified, following a thorough risk assessment. Appropriate access, rescue plans and equipment should be provided.

Ensure that all practicable measures are taken to avoid injury-causing impact with the structure or obstructions and to avoid dangers to third parties.



Ensure that a calibrated anemometer is available on-site, and all rope access activities shall be reviewed and/or postponed if the wind speed exceeds continued 25 KPH or gusting and local eddies exist.

All related documents such as operating manuals, inspection, third party testing, maintenance, etc. shall be properly kept and be made available to DM OHS inspectors when requested.

F. Anchorage

Each anchorage point shall comply with all applicable requirements of Emirates Authority for Standardization and Metrology (ESMA) and/or conforms to international standards such as BS 8610 Personal Fall Protection Equipment - Anchor Standards and EN795 Protection against Falls from Height, Anchor Devices - Requirements and Testing. Also refer to IRATA International Code of Practice for best practice guidance on anchorage.

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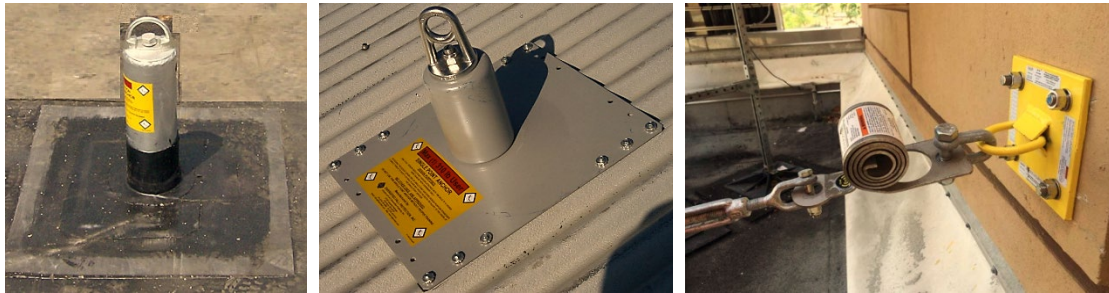
All anchorages should be tested and approved by a competent person before use - a visual inspection may not reveal the structural integrity of the anchor point (i.e. the bolt may have failed below the concrete surface).

Each anchorage point should be located so that an anchor line of the rope access system can be attached to it before the person using the system moves into a position where the person could fall.

Existing structural features or equipment planned for use as anchor point shall be verified by a competent person as having adequate capacity to serve as anchor points. Examples are structural steel and reinforced concrete column.



When existing structural features or equipment are used as anchor points, ensure to avoid edges or corners that may cut, chafe or abrade fall protection components. Where necessary, use softeners such as wood blocking, PVC/ABS tubes, etc. to protect connecting devices, lanyards or lifelines from damage.

Examples of anchorage:



Never use the following structures or equipment as anchors:

- TV antennas;
- Metal chimneys;
- Small pipes and ducts;
- Roof vents or hatches;
- Stair or balcony railings;
- Fixed access ladders; and other structures or equipment which are unstable, movable or inadequate to carry required loads.

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G. Electrical Hazards

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 rope access.

Working from a rope access system 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.

A minimum safe distance must always be kept between the overhead lines and the closest point of the rope access. 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).

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



Ensure to observe barriers and markers where these are erected to mark safe working distances.

Ensure that the technician is properly guided by an experienced signaller when moving under or near overhead electric lines.

Do not raise any part of the tool above permitted limits when working (only when related precautions are established and permitted by competent supervision) under/near overhead lines or other live wires.

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

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H. 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.

All technicians and supervisors shall receive appropriate training for rope access work and should also have the appropriate knowledge, experience and practical skills for the type of work being undertaken.

Training shall be carried out by a competent organization and should include assessment of specific skills and knowledge (e.g. meeting International Rope Access Trade Association (IRATA) standard).

The training program should be formalized in both time and performance and should be assessed by a competent person who did not deliver the training and be independent of the training organization and trainee. Training schemes should clearly state the scope of the training provided, the intended duration of certification and any limitations to be observed, either of individual personnel or of working methods.



Companies should be aware that training is not to be substituted for experience. Newly trained individuals should be closely supervised and introduced to rope access work gradually, under carefully controlled circumstances.

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.

Note: If access techniques have not been used by the technician for more than six months, refresher training must be carried out and the technician should receive a higher level of supervision until they have become accustomed again to this type of work.

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I. Emergency Preparedness

Rescue Plans

Ensure suitable emergency preparedness and rescue plans are developed and are in place when carrying out rope access work. There should be a specific rescue plan for each worksite, with on-site practice if appropriate. In any case, work teams should practice rescue techniques from time to time.

Technicians should always be able to recover themselves, or to be recovered quickly and efficiently by the immediate work team or by a dedicated on-site rescue team.

Rescue equipment should be appropriate to the nature of the workplace, e.g. length of ropes, availability of extra anchor slings, hauling equipment, etc.

In general there are four options for dealing with an emergency which requires an injured or incapacitated person to be recovered to safety. Remember that the immediate aim is to recover the casualty to the nearest point of safety the following hierarchy of rescue methods applies.

- Option 1: Lowering a remote suspended person
- Option 2: Raising a remote suspended person
- Option 3: Self-evacuation by descent
- Option 4: Rescuing another in descent



Emergency Drills

Ensure to conduct periodic emergency drills including rescue for persons who have on-site responsibility for the rescue of a trapped person. Ensure to include in the drill the practice of defined emergency controls during such situations.

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.

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J. Monitoring and Inspection

Ensure that a competent person visually inspects the rope access system before each use. For guidance refer to buddy checking in IRATA International Code of Practice.

Ensure that all rope access systems are thoroughly inspected and examined by a Emirates International Accreditation Center (EIAC) accredited third party company in accordance with the specified schedule at intervals of no greater than six months depending on the frequency of use or severity of wear. The third party engineer must inspect the rope access system through visual and function testing as required and not rely on the technician (worker) for the function tests.

Documented inspection procedure shall be available and all inspection conducted shall be recorded.

Ensure that the inspection procedure and the inspection of the rope access system is in accordance with the manufacturers' instructions.

Rope access equipment and its accessories shall be discarded/removed from service if any defect, damage or deterioration has been observed during inspection, and after lapsing the given lifespan date (shelf life) of the manufacturer.

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



Where cleaning companies employ subcontracted rope access technicians, they must confirm that the subcontractor carries out the above inspection and examination requirements to ensure that all equipment used is fit for purpose and in good condition.

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.

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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: Personal Fall Protection Equipment – Anchor Systems – Specifications (BS 8610:2017)

British Standard/European Standard: Personal Fall Protection Equipment – Anchor Devices (BS EN 795:2012)

International Rope Access Trade Association (IRATA): International Code of Practice and Technical Guidance and Safety Notices

Working at Height Association (WAHSA) – Guidance on Rescue During Work at Height

Further information is available from:

Health and Safety Department

Dubai Municipality

Tel: 800900

Safety@dm.gov.ae

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