





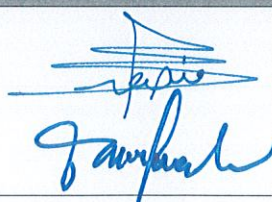
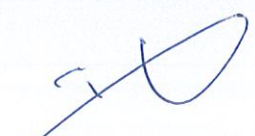
COMPANY STANDARD INSTRUCTION

HSE INSTRUCTIONS FOR SAFE WORK AT HEIGHT

Instruction No: - IN-250-HSE-16

Document Classification: Internal

Approved by	Name	PAUL VERMEIREN	
	Position	CHSEQO	
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		SE	For/SM/ HSESM	HSEQ-GM



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Revision / Modification History:

Rev #	Date	Section No.	Reason for revision / modification
0	30-SEP-2016	All	PR-251-SF-09 converted as Instruction to meet the requirements and modified as per New Organization structure
01	10 June-2020	All	Updated definition of work at height, add definition, update reference, change the document template
		7	Updated scaffolding requirements, general safe work guidelines, portable ladder & personal fall arrest system. Included the prevention of drop objectives, industrial Rope access system, Safety net, Mobile elevated work platforms, rescue plan and anchoring, lanyard and life line requirements. Updated the scaffolding inspection checklist.
		9.3	Added full body safety harness checklist
02	18- Jan 2021	7.4.5	Added orange tag requirements in 7.4.5 d & i






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1. OBJECTIVES.

The objective of this document is to eliminate, prevent and control hazards related to work at height.

2. SCOPE

This instruction is applicable to all works performed at 1.5 meter above or below the ground level with work permit in QAPCO Premises.

3. INSTRUCTION SUMMARY:

This instruction provides guidance and outlines responsibilities related to safe work at height (including scaffolding works) at QAPCO premises. It provides users with general guidelines for eliminating, preventing and controlling hazards related to work at heights.

The purpose is to specify conditions under which work (permit required) can be carried out at heights of 1.5 meter and above or lower the ground in a safe manner.

Every User must follow QAPCO Golden rule # 10 (Work at Height)



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4. DEFINITIONS & ABBREVIATIONS:

	Abbreviation / Key word	Definition summary
1.	Work at Height	It means all works required work permit and will be carried out at 5 feet (1.5 m) or more, where risk of fall exists for a person.
2.	Scaffold	A temporary structure on or from which persons work or which provides support for the materials used in construction, maintenance, inspection, repair, or demolition work or access to certain areas/ equipment.
3.	Competent Scaffolder	An operative assigned duty in the erection, alteration, maintenance or dismantling of a scaffold, who is trained and certified by a recognized third party.
4.	Scaffolding Supervisor	A certified and experienced person who manages the scaffolding erection and dismantling activities, who is trained and certified by a recognized third party.
5.	Scaffolding Inspector	A certified and experienced person who ensures that the scaffolding is properly erected and safe to work, who is trained and certified by a recognized third party. He inspects the scaffold for its integrity and work worthiness and validates the Scaff tag.
6.	Lead executor	Is a person who is trained and qualified for QAPCO work permit system and responsible to ensure that all conditions of the permit, agreed to with the Permit Issuer, are always being fulfilled throughout the job. He can be a QAPCO staff or a contractor employee
7.	Ladder	Means a portable appliance consisting of two stiles joined by steps or rungs and designed for the purpose of climbing and descending.
8.	Working Platform	The deck from which (building/structural) operations are carried out. Working platform with 1.5 meter high guardrails.
9.	Guardrail	A member incorporated in a structure to prevent the fall of a person from a platform or access way.
10.	Mid rail	A member installed at a height midway between the top edge of the guardrail system and the walking-working surface
11.	Toe board	An up stand at the edge of a platform, intended to prevent materials or Operator's feet from slipping off the platform.
12.	Coupler	A component used to fix scaffold tubes together.
13.	Lift	The assembly of ledgers and transoms forming each horizontal level of a scaffold.
14.	Anchorage	Component cast or fixed into the building or structure for the purpose of attaching a scaffold or tie; it also means the holding down system for cantilevered beams when referring to suspended scaffolding and cantilevered platforms.
15.	Standard	A vertical or near vertical tube, which carries the scaffold's weight and loads imposed to the supporting structure.
16.	Scaffolding Tag (Scaff tag)	A plastic entity which identifies the scaffold and is used as an administrative control measure to certify the scaffold as safe to use or not and is displayed on the scaffold at the site.

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17.	Lifeline	A line from a fixed anchorage or between two anchorages, independent of walking or working surfaces, to which a lanyard or fall arresting device is secured.
18.	Safety Harness	The part of fall protection equipment, which supports the body in the event of a fall in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a Personal Fall Arrest System. Safety belts shall not be used as fall arrest equipment.
19.	System Scaffold	It is flexible scaffold system comprising of easy to assemble parts which can be assembled fast and allows Scaffolders to erect rigid platform.
20.	Man-lift	A portable system normally used to lift workers through basket with a powered lifting system.
21.	PPE	Personnel Protective Equipment
22.	PFAS	Personnel Fall Arrest System
23.	TTL	Turn Table Ladder
24.	Restricted Area	Plant area within the safety gates is called the restricted area and is the area in which exists or may exist a hazardous atmosphere.
25.	Authorized Lead Job Executor	QAPCO/ Contractor Employee nominated from his department / company to carry out the job
26.	HSE -IMS	Health, Safety & Environment -Integrated Management System
27.	Management	People (a person or group of people) with authority and responsibility for the conduct and control of an organization.
28.	Line management	All the managers of the plant: chief, director, manager and Head of.
29.	CHSEQO	Chief HSEQ Officer
30.	Every User	Anyone (QAPCO/Contractor/ Specialist) who will use scaffolding.
31.	100 % Tie off	The term '100 percent tie-off' means that anchorage is maintained at all times. This is done to allow for fall protection even when transferring between two separate anchorage points. A 100 percent tie-off will require twin-tailed lanyards that allow users to remain anchored to one point of anchorage with one lanyard, while transferring to another point of anchorage with the second one.
32.	MEWP	Mobile elevated working platform
33.	Rope access	Techniques by which access is gained to structures (buildings or equipment) where ropes are the primary means of support, positioning, or safety protection.
34.	Rope access Technician	Highly trained technician performs inspection and maintenance work by ropes which is the primary means of support and not have working platform Approved by IRATA (international industrial Rope access trade association) or another recognized third party
35.	Drop objects	Any object, with the potential to cause death, injury or equipment/environmental damage, that falls from its previous static position under its own weight is called as dropped object.
36.	Travel Restrain system	A system which allows worker to carry out task but prevent any position from where he could fall.

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		<i>A combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support that an employer uses to eliminate the possibility of an employee going over the edge of a walking-working surface.</i>
37.	A Type Ladder	The A type ladder is one that from the side looks a bit like the letter A.
38.	HSEQ-GM	Health, Safety, environment & quality Group Manager
39.	SM	Safety Manager
40.	SE	Safety Engineer
41.	TGM	Technical Group Manager
42.	SRL	Self-Retracting lifeline: Is type of lifeline which involves a spring-loaded reel to ensure the shortest possible length of lifeline between the user and the reel.
43.	IRATA	International Rope Access Trade Association: an association certify the Rope access technician
44.	JSA	Job safety analysis
45.	IOCP	International code of practices
46.	QAPCO	Includes QAPCO, Qatofin, QVC (Petrochemical Shared Services)

5. DOCUMENTS REFERENCES

Document ID	Document Title	Summary of dependency or use
PR-PSS-114	Permit to work procedure	Work permit roles and responsibilities
IN-250-HSE-03	QAPCO 12 Golden Rules at work	Work at height Golden rules
IN-250-HSE-07	Instruction for Cold work Permit.	Work Permit Requirements
PR-PSS-127	Job safety Analysis.	Criteria and steps of Risk assessment
IN-250-HSE-05	Contractor safety rules and regulations	Contractor HSE requirements

6. RESPONSIBILITIES

#	Job Title	Responsibilities
1	Chief HSEQ Officer:	Accountable to ensure that all the required support and resources are provided for effective implementation of this instruction.
2	Safety Manager	Ensure implementation of instruction, support to correct the identify the hazards.
3	HSE Support Manager	<ul style="list-style-type: none"> Reviewing and updating the instruction and criteria relevant to working at height in QAPCO. Provide required training to employee and contractor
4	Department manager	<ul style="list-style-type: none"> Provide suitably qualified Safety staff in order to provide guidance and assistance as and when required. Ensure suitable PPEs and risk control measures are used for all (involving employees and/or contractors) works at height (including scaffolding). Ensure regular inspection mechanism is in place for the scaffoldings, Man-lift Basket and other work at height related equipment. Ensuring work at height hazards are identified & managed in accordance with the requirements of this Instruction.

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5	Asset owner	<ul style="list-style-type: none"> • Shall identify, secure & communicate the plant shut down switches or sensitive devices in the vicinity of scaffolding erection and dismantling. • Identify the removable guardrails and identify it.
6	Employees & Contractor staff:	All employees and contractor staff working in QAPCO shall adhere to this instruction for all working at height activities.
5	Lead Executor/ execution supervisor (for work at height):	<ul style="list-style-type: none"> • The Lead Executor / area owner responsible for the job involving work at heights shall: • Assess the workplace to determine if the walking or working surfaces on which employees are to work have the strength and structural integrity to safely support workers. • Ensure that employees have appropriate fall protective devices, and equipment when working unprotected more than 6 feet above the nearest working surface. • Ensure that hazards associate to work at height, erection and dismantling of scaffolding are communicate to workforce.
7	Scaffolding Contractor:	<ul style="list-style-type: none"> • The contractor company will be responsible for the design, erection, maintenance, inspection / certification and dismantling of scaffolding in QAPCO premises. • Responsible to comply with this procedure and requirement defined in project HSE Plan. <p><u>They are responsible to ensure that:</u></p> <ul style="list-style-type: none"> • Certified and experienced Scaffolders, Supervisors and Inspectors are provided to erect, maintain, inspect and dismantle the scaffoldings. • Scaffolding material is safely stored, transported and used. • Suitable PPEs including Personal Fall Arrest System (PFAS) are provided to their staff based on the hazards of their activities. • Responsible to ensure the compliances of HSE Plan.
8	Scaffolding Supervisor:	<ul style="list-style-type: none"> • The Scaffolding Supervisor (contractor) shall ensure that all staff involved in the scaffolding erection, maintenance and dismantling are trained, certified and perform the activities in compliance with this instruction. • Planning for scaffolding activities, be aware of area specific hazards before executing scaffolding erection at site. • Ensure pre-checks are performed before erecting and dismantling scaffolding and all hazards are identified and communicated to workers. • Risk of fire to be considered while erecting scaffolding near to hot surfaces. • Check and verify that wooden planks shall not be used in hazardous plants or high temperature units. • trained and certified by a recognized third party
9	Scaffolding Inspector:	<ul style="list-style-type: none"> • The scaffolding Inspector (contractor) shall be responsible for inspection, maintenance and registration of scaffolding: • Initial Inspection and certification of the scaffolding. • Ensure all scaffolding are tagged. • Ensure weekly Inspection of the scaffolding.

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	<ul style="list-style-type: none"> • Inspect the scaffold after severe wind or rainstorms or any such adverse weather that can affect the structural integrity of the scaffold and authorize corrective measures. • Incorporate measures for identifying defective scaffolding materials and ensure that they are not reused. • Ensure re-inspection has been conducted if any modification was done to the existing scaffolding platform. • Ensure that record for each scaffolding is registered and maintained through 'Scaffold Inspection Checklist' (Attachment A). • trained and certified by a recognized third party
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7. INSTRUCTION METHOD:

7.1. Working at heights Hazard Elimination:

QAPCO shall eliminate hazards associated with working at heights from its operations. Where the potential for a fall from height exists, the hazards shall be eliminated or the risk to be controlled to an acceptable level by adopting the hierarchy of control Elimination, Substitute, Isolate, Engineering Control, Administration and PPE.

Due care and attention shall be provided to ensure that alternative approaches to working at heights do not increase the risk to occupational health and safety of personnel.

7.2. Working at heights Hazard Prevention:

7.2.1. Training and Awareness:

Safe work at height training is part of HSE trainings and basic work at height hazards and fall prevention awareness are provided using to everyone using different training techniques:

- Class room trainings
- Virtual training
- Tool Box Talks
- Awareness Sessions

Personnel involved in erecting, modifying, dismantling, supervising and inspecting the scaffolding and rope access shall undergo certified training by a recognized third party.

7.2.2. Means of Access:

The means of access to high structures (fixed or movable), i.e. fixed or portable ladders, powered lifting and suspended baskets, shall be suitable for the purpose and shall be inspected prior to use. No work is allowed on the ladder, Ladder is only used as a means of access.

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7.2.3. Integrity:

The integrity of the high structure shall be such that the required operations can be performed safely. This includes:

- a. The high structure shall be able to take the load of personnel, equipment and materials required for the task.
- b. The environmental conditions.
- c. The forces imposed upon it by any means of access, which is connected to it.

7.2.4. Pre-Work Checks:

Before work commences, the Supervisor in charge of the work shall ensure that:

- a. A joint site visit by scaffolding supervisor/ execution supervisor and asset owner shall be conducted and a risk assessment to be performed (if required).
- b. All necessary Work Permits (Cold, Hot etc.) required for the job have been obtained.
- c. All static, moving, lifting and anchoring equipment integral to the means of access and high structure, including those associated with the work task, are inspected/certified, correctly fitted in a sound condition and fit for the intended purpose.
- d. All personnel have been provided with the suitable PPEs, PFAS and trained about their use.
- e. Area owner shall identify & secure the plant shut down switches or any other sensitive equipment in the vicinity of scaffolding erection and dismantling.
- f. All personnel have been briefed in (tool box talks), and understand, the safety aspects of the job.
- g. In case welding work will be performed nearby wooden scaffolding platform, it must be soaked and covered with a fireproof material to prevent sparks or slag from becoming a fire hazard.
- h. Safe access to scaffolding shall be evaluated and all curbs and elevated pipelines shall be avoided.
- i. Risk of fire to be considered while erecting scaffolding near to hot surfaces, pipelines having combustible /flammable gases and wooden planks should not be allowed in process plants having high temperature operation parameters, combustible / flammable materials.

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7.2.5. General Safe Work Guidelines:

- a. Standard Working platform with guardrails shall be provided, whenever any person is working at a height of 1.5 m or more at process area.
- b. Fall protection shall be considered during design and construction of all working platform QAPCO facilities.
- c. Work surfaces, platforms, mobile structures and equipment, scaffolding must be of substantial construction to support work methods, equipment and/or personnel placed on the surface.
- d. Moving machinery hazards to be considered when working near the equipment or erecting / dismantling of scaffolding.
- e. Three-point contacts must be ensured while climbing, and personnel shall not be permitted to climb whilst carrying tools or heavy loads.
- f. All overhead work shall be reviewed when wind speed reaches 10 m/s or above.
- g. Any overhead work, which requires to be carried out during the hours of darkness, shall be subject to authorization from the Safety department. Such authorization shall also include the required standard of illumination.
- h. If a scaffold assembly is found unsafe the Green TAG shall be immediately removed, barricade the access scaffolding and respective focal point to be notified.
- i. Never climb bracing, vertical posts, or frames.
- j. Never extend working heights by planking guardrails or using boxes, ladders, or other makeshift devices on top of scaffolds.
- k. Never overload a scaffolding: tools, materials and debris shall not be allowed to accumulate that could exceed the scaffold design load.
- l. Personal fall arrest system is required whenever, working outside the handrails of a scaffolding or platform or there is chance of fall.
- m. Where scaffolds and platforms are erected above walkways or work areas, the hazardous area below should be barricaded and high visibility warning signs to be posted.
- n. Employees/ contractors shall use helmet with chin strap when working at height or moving around.
- o. Collective protective systems like fixed railing, doors, gratings, cage ladders, swing doors etc. shall be periodically inspected.
- p. Guard rails with 1.5 m height shall be provided on the frequently used locations like compressor areas, building roof tops.
- q. Access to cage ladder going to unprotected areas (No railing) shall be restricted and secured
- r. Each asset owner shall identify the removable guard rails and mark it with visible color (orange)

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s. All removable guard rails shall be secured.

7.3. Drop objects:

Drop objects can be material, tool, debris or equipment which can cause serious injury or even fatality if falls/struck on the employee/contractor.

7.3.1. Causes of drop objects:

- a. Dropped hand tools and equipment being used on a higher level
- b. Loose boxes or other objects that get displaced and fall from higher level.
- c. Loads being lifted or carried overhead may not be secured properly, leading to objects getting dislodged and falling
- d. Housekeeping practices not followed creating hazard in elevated locations that cause objects to drop.

7.3.2. Prevention of drop object:

- a. All employees and contractor shall assess potential for dropped objects in the course of their work and intervene if additional controls are required & precautions shall be taken to prevent materials from falling.
- b. Lifting loads or lowering them over other workers' heads shall be avoided, at least the area on ground level is barricaded
- c. Practice good housekeeping by keeping/ stacking tools and other materials. Always stack away from edges and off railings or sills.
- d. Personnel shall not be permitted to climb whilst carrying tools or heavy loads, the only exception being tools carried in a waist belt designed specifically for the purpose. Where tool is carried in a belt for subsequent use the tools will be attached to the belt by a safety line to prevent any dropped objects.
- e. When work at height, tools shall be secured with drop prevention measures such as:
 - Tool wristbands with attachment point
 - Tool tether
 - Tool Pouches
 - Tool Holsters
 - Tool belts
- f. If any task requires removal of gratings from fixed platform, risk of drop objects shall be assessed, area underneath to be barricaded and inform to concern people.
- g. Grating hole shall be secured properly to avoid drop object hazards & fall hazard, don't leave any big gaps on the working platforms.
- h. Hard hats shall be secured with a chin strap or other retention device.
- i. Where practical, personnel shall not be assigned to work directly below the overhead work positions or other persons.

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- j. Where tools, materials, or equipment are stacked to a height higher than the top edge of the toe board, screening extending from the toe board or platform to the top of the guardrail shall be erected to protect employees below.
- k. Toe boards shall be securely fastened in place at the outermost edge of the platform and have not more than 1/4-inch (0.7 cm) clearance above the walking/working surface.
- l. Toe boards shall be solid or with openings not over one inch (2.5 cm) in the greatest dimension.
- m. Use of bucket or tray for all object which as potential to fall from height
- n. Erect signage and physical barriers to restrict access before work is conducted overhead
- o. Inspect all overhead equipment and locations for loose items that may present a hazard during maintenance activities.

7.4. Guidelines for Scaffolding:

- a. All scaffolds shall be designed in accordance with the requirements of recognized standards (BS or equivalent).
- b. The design of the scaffold shall consider the following not limited to:
 - o The strength, stability and rigidity of the supporting structure including imposed loads.
 - o The safety of persons engaged in the erection, alteration and dismantling of the scaffold.
 - o The safety of persons using the scaffold.
 - o The safety of persons in the vicinity of the scaffold.
 - o Working / required load.
- c. During erecting and dismantling of scaffolding full body harness shall be used.

7.4.1. Erection, Alteration and Dismantling:

- a. Only trained and certified scaffolders, under the supervision of scaffolding supervisor, shall undertake erection, alteration and dismantling of a scaffolding.

7.4.1.1. Erection

- a. All scaffold erection activities should be carried out in such a way that non-involved personnel in the vicinity of work are not at risk.
- b. Prior to erection, the Scaffolding Supervisor shall inspect the ground area upon which the scaffold is to be positioned and shall inspect all equipment which shall form any part of the scaffold, means of access, work platform, power lines and lifting gears.
- c. Erection and / or dismantling of scaffolding during the hours of darkness are only permitted in cases of extreme urgency and when no other practicable alternative can be identified.
- d. Risk of electric power lines shall be considered during designing of scaffolding. minimum safe distance (5 meter) shall be maintained from live power lines. Any shorter distance shall be approved by competent person (maintenance electrical engineer) .
- e. Scaffolding erection, alteration and dismantling shall be done through Cold Work Permits.

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- f. The cold work permit will be closed after inspection and certification of scaffold.
- g. A separate Cold Work Permit shall be used for dismantling of the scaffold.
- h. During erection, access to scaffolding construction area shall be restricted by warning tape.
- i. During the erection, the Red Tag / Do Not Use sign shall be put in place.
- j. Personnel, other than the Scaffold Inspectors and Scaffolders, shall only be permitted upon green Tag.
- k. Guardrails, mid-rails, and toe boards shall be provided on all sides of platforms more than 5 ft.
- l. Ladders shall be fitted with hand rails.
- m. Guardrails must be of rigid material. Flexible materials such as fiber rope, wire rope or chain shall not be used as guardrails.
- n. The top edge height of guardrail should be 1.5 meters (59 inch), above the walking / working level / platform.
Note: if height of top rail is 1.1 meter, an additional rail should be provided above top rail to increase the height.
- o. Mid-rail must be installed at a height midway between the top edge of the guardrail and the walking / working level.
- p. Toe board must be fixed at a height of 4 inches.
- q. The access ladder shall extend at least 1.0 m above platform level to provide a handhold at the stepping off point.
- r. External ladders are only allowed for first flight from ground level to first platform therefore, the ladder should be positioned inside the scaffolding structure to prevent fall outside the structure.

7.4.1.2. Alteration

- a. Users are not authorized to alter the scaffolding; only authorized scaffolders will perform modification of inspected scaffolding.
- b. New cold work permit shall be issued for alternation of scaffolding.
- c. During modification, the Red Tag / Do Not Use sign shall be put in place.
- d. All modifications to existing scaffolding shall be carried out in such a way that the stability of the scaffolding is not impaired.
- e. Re-inspection required for after any modification done to existing scaffolding.
- f. Supplementary components shall be added before those, which have to be removed.

7.4.1.3. Dismantling

- a. During dismantling, the Red Tag / Do Not Use sign shall be put in place.

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- b. Only trained and certified scaffolders shall perform the dismantling job.
- c. Scaffolding pipes and other accessories shall be drop down, all dismantling material lowering down gradually by using tagline & basket.

7.4.2. Tower and Mobile Scaffold:

- a. Scaffold towers shall only be erected and used on firm level ground.
- b. Must confirm the BS-EN1004 performance standard.
- c. Static towers shall have metal base plates under the standards, and unless the foundation is concrete, timber sole plates shall spread the load.
- d. Wheels, or castors, on mobile towers shall be not less than 150 mm in diameter. Castors (Wheel) shall be fixed into the base of the standards and be fitted with brakes, which cannot accidentally be released.
- e. Keep wheel brakes locked at all the times unless moving the scaffold.
- f. Where joints in standards are necessary, they shall be made with sleeve or parallel couplers.
- g. Ledgers and transoms, at right angles to the standards, shall commence not less than 150 mm from the bottom to provide a firm base clear of the castors.
- h. Except at working platform level, ledgers and transoms shall be fixed to the standards with right angle couplers.
- i. The maximum height to base ratio to which a static or mobile tower shall be erected is mentioned below. This ratio can be used if the specific ratio is not provided by the manufacturer.

Type of Tower	Height/Base Ratio
Static tower used indoors	4:1
Static tower used outdoors	3.5:1
Mobile tower used indoors	3.5:1
Mobile tower used outdoors	3:1

- j. The maximum height established shall be the height to the working platform, not to the guardrail.
- k. The maximum permitted height of a mobile tower at QAPCO is 8m outdoors and 12m indoors unless otherwise specified by the manufacturer.
- l. In any event, the height to base ratio shall apply unless outriggers are provided for additional height.

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- m. Top working platform shall be protected with standard guardrails (Top rail, mid rails and toe board).
- n. Where the maximum free-standing height or the maximum recommended height to the base ratio requires to be exceeded or the tower is likely to be exposed to appreciable wind loading, the scaffold shall be tied to the fixed structure, or designed to ensure stability by means of ground anchors etc.
- o. Mobile towers shall only be used on solid, level surfaces.
- p. Mobile towers shall have their castors turned outwards to provide maximum base dimensions and the brakes locked on when the scaffold is in use.
- q. Mobile towers shall be moved only by pulling or pushing at the base.
- r. Working platforms shall be cleared from people & secured materials when it moves from one place to another.
- s. No platform moves when an employee is on it.

7.4.3. Access to scaffolding:

Everyone shall use safe access to approach the scaffolding platform. Following but not limited shall be considered when installing the access ladders:

- a. When scaffold platforms are more than 2 feet (0.6 m) above or below a point of access, portable ladders, or other mean of access shall be provided, Cross braces shall not be used as a means of access.
- b. Worker shall not carry any tool while climbing the ladder in hands to ensure three-point contact.
- c. ladders should be kept in good condition. Ladders should be inspected at regular intervals by authorized personnel contractor in charge.
- d. ladders with structural defects- such as broken or missing rungs, cleats or steps, broken or split rails, corroded components or other faulty or defective components- must immediately be removed from service and marked.
- e. Always face the rungs while climbing up or down.
- f. The ladder shall be inspected before use for cracked or split stiles, missing, broken, loose or damaged rungs, and splinters. To facilitate inspection, ladders are to be kept free from dirt and grease.
- g. Three Point Contacts to be maintained on the ladder (two hands and one foot, or one hand and two feet).

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- h. The ladder shall be of adequate length to enable it to extend to at least 1.0m (3 ft 6 in) above the platform or working point, unless other suitable handholds are available.
- i. It is forbidden:
- To use ladders that are too short to provide access and handholds, when work is to be carried out from the ladder.
 - To use short ladders spliced together.
 - The use of ladders in a horizontal position as scaffolding
- j. **Securing of a ladder** is very important for its safe use and the following guidelines shall be followed:
- The ladder shall be set on a firm, level, and non-slippery base.
 - On soft ground solid footing must be provided to prevent the ladder from sinking.
 - The ladder shall be secured effectively by lashing it as near as possible to its upper resting place to prevent sideways movement.
 - Where top securing is impractical, the ladder can be safely secured by using guys in conjunction with foot lashing.
 - Tier- off the ladder to a suitable point.
 - Correct positioning/angle of the ladder is 4 times height and 1 time base (4:1) or 75o however if, it could not be followed due to complex configuration of worksite, it should be assessed with safety staff.
 - Any doors or openings under a ladder shall be locked and gangways blocked of.

7.4.3.1.Selection of Ladders:

Ladder are used only for access, it is necessary to select the proper ladder. following shall be considered when selecting the ladder

- a. As far as practicable, aluminum ladders shall be used inside process plant battery limits except creating additional risk.
- b. While using aluminium ladders at vinyl plants risk of reaction with process material (EDC, Chlorine) etc.to be considered and precaution to be in place that there is no direct contact of EDC or other reactive material with Aluminium.

WARNING: Aluminum / metal ladders/ Planks are prohibited in chlorination cells area (Vinyl Plant), only non-conductor material is allowed to use as a scaffolding material.

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- c. Metal ladders shall not be used where there is a possibility of contact with live electrical conductors.
- d. For work on roofs, a special roof ladder or crawling boards may be used.
- e. When the height demands its use, a proper extension ladder must be used.

7.4.4. Inspection, Maintenance and Registration:

- a. Prior to use, the scaffolding shall be inspected (Appendix 9.1 or equivalent) by the Scaffolding Inspector, and when it is altered, adjusted or subjected to rain or strong winds.
- b. Scaffolding shall be inspected at regular intervals not exceeding seven days.
- c. The Scaffolding Inspector shall examine/inspect the scaffold inclusive of peripheral equipment and shall record his findings in the Scaffold Inspection Checklist (Appendix-9.1).
- d. Scaffolding Contractor is responsible to conduct effective Inspection, Maintenance and Registration programs for all types of scaffolding such as Fixed, Tower or Mobile.
- e. The Scaffolding Supervisor shall appoint only competent Scaffolders, to be responsible for maintenance works on scaffolding.

7.4.5. Scaffold Tagging System:

- a. Scaffolding Contractor is responsible to carry out Scaffold Tagging System for all types of scaffolding such as Fixed, Tower or Mobile.

No one shall be permitted to work on Red Tagged scaffold.

- b. During Erection, a **Red Tag** will be installed on the scaffolding.
- c. After successful inspection, the Scaffolding Inspector shall place a weatherproof laminated solid **Green Tag** with black lettering. This will approve the scaffold structure.
- d. Scaffolding temporarily modified e.g. (collective protective barrier removed to access/ remove the equipment etc.), scaffolding shall be tagged with Orange Tag.
- e. Unique identification tag number must be provided on all tags for tracking purposes. This tagging number should also be listed in the Scaffold Tagging Register (Appendix-9.2).

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f. The Scaff tag must have the following information:

- Scaffold location
- Reference No.
- Date Erected
- Requested by
- Built by : Name and signature
- Scaffold load capacity
- Working load
- Inspector Name



- g. This Green “SAFE FOR USE “Tags will be attached to the scaffold at each access point.
- h. Red Tags “DO NOT USE SCAFFOLD” will hang on scaffolds during erection, dismantling or modification.
- i. Scaffolding with **Orange Tag**, workers shall wear the safety harness whenever working at scaffolding.
- j. Safety department will periodically audit/verify/confirm the inspection and tagging of scaffolding.
- k. The Scaffolding Inspector shall inspect the scaffolding periodically, at least once every seven days, and whenever it’s exposed to high winds or rains, after any modification/alteration and the tag must be renewed.
- l. If a scaffold requires modification, it will be carried out by the scaffolding contractor and a new permit shall be issued. During modification, Green Tag will be replaced with Red Tag i.e. “DO NOT USE SCAFFOLD TAG” and the scaffold should be reused only after inspection by Scaffolding inspector and the Green Scaff tag is attached.



7.5. Ladders:

The instruction provides guidelines related to proper use and maintenance of the ladders minimum requirements of according to OSHA 29 CFR 1910.26 for Portable Ladders and OSHA 29 CFR 1910.27 for Fixed Ladders standard, OSHA 1910.23 for Mobile ladder stands and mobile ladder platforms and OSHA 1926.1053 for stairways.

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7.5.1. General Rules

- a. "A" type ladder usage is forbidden for all QAPCO facilities.
- b. Wooden ladders are prohibited, due to the safety hazards of rapid deterioration caused by extreme climate conditions.
- c. Fiberglass ladders should be used for activities which have electrical risk
- d. Three-point contacts must be ensured while climbing, and personnel shall not be permitted to climb whilst carrying tools or heavy loads.
- e. Always face the rungs while climbing up or down.
- f. Ladders shall be inspected visually for any defect or damage before each use
- g. Ladders are not loaded beyond the maximum intended load
- h. Ladders should be inspected at regular intervals (once in six month) by an authorized and component personnel of asset owner / contractor in charge. Asset owner shall maintain the register for portable ladder / steps.
- i. Ladders / steps with structural defects- such as broken or missing rungs, cleats or steps, broken or split rails, corroded components or other faulty or defective components- must immediately be marked defective or tagged with "Do Not Use" or similar language and withdrawn from service.



7.5.2. Single-Straight Ladders

- a. Use of single-straight ladders shall be justified by:
 - o Single - straight ladders are allowed only for access purposes
 - o Ladders are not allowed as a workstation, even not one single small activity
 - o Always apply the buddy system, buddy should holding the ladder
 - o Correct positioning/angle of the ladder is 4 times height and 1 time base (4:1) or 75°
 - o The ladder shall be of adequate length to enable it to extend to at least 1.0m (3 ft 6 in) above the platform or working point
 - o Ladder should be stable. Ensure there is a good supporting surface at the bottom and top. Place the ladder on a flat and firm surface.
 - o Secure the ladder to prevent it from slipping.
 - o If a portable ladder/ step is not moved from a place in last 6 months, that portable ladder should be replaced with permanent fixed ladder

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7.5.3. Mobile Ladder Stands / Platforms and Stairways :

Mobile Ladder Stands are step ladders to be used for visual inspection or check/control activities.

Mobile Ladder Platforms only use for the nature of the **work is low risk** (Work that does not require heavy effort, examples of permitted activities are- checking instrumentation, easy to operate (limited size) hand valves, taking measurements, small maintenance works, visual inspection, warehouse activities etc...)

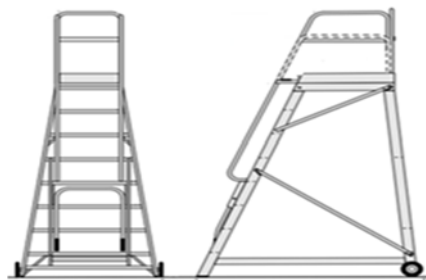
Following safety measures shall be considered when using or selecting Mobile Ladder Stands / Platforms:

- a. Mobile ladder stand platforms more than four step or rising more than 30 inches (76 cm) shall be secured from 4 sides with ridged handrails at least 91cm height from platform to handrail end.
- b. Mobile ladder stands more than four step or rising more than 30 inches (76 cm) will have 3 side rigid handrails
- c. Stairways more than four step or rising more than 30 inches (76 cm) one stairrail system along each unprotected side or edge.
- d. Handrails or stairrails height must be at least 91cm
- e. Mobile ladder stands and platforms are capable of supporting at least four times their maximum intended load
- f. The wheels (if any) should always be locked before accessing.
- g. Stability should be assured.
- h. Overreaching outside of the platform is strictly forbidden

Ladders: (example)



Mobile Ladder Stand



Mobile Ladder Stand Platform



Stairways

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7.5.4. Fixed Ladders

A fixed ladder is a vertical ladder mounted permanently to a structure. These ladders are primarily used to access roofs or other structures for industrial purposes. (ladders that are designed into or are integral part of machines or equipment are excluded). Fixed ladders are installed where frequent access is necessary. For safe use of a fixed ladder following points shall be considered:


- a. Only ANSI ASC 14 or EN-131 complaint ladders shall be used.
- b. Fixed ladders shall be of standard pitch (90 degrees from the horizontal). Substandard pitch ladders (those with a pitch of 60 to 75 degrees) are prohibited.
- c. Fixed ladders more than 20 feet (6.1 m) in height shall be provided with a cage or ladder safety device
- d. Fixed (Monkey) ladders must be provided with cage starting from 2.5 meters from the base of ladder.
- e. Rest platforms shall be provided at least every 10m.
- f. A landing platform capable of supporting a load of 100 pounds per square foot and fitted with guardrails.
- g. Chain / drop bar/ swing gate shall be fitted at top of monkey ladder.
- h. Fixed Ladders shall be inspected for any defect/damage before each use. Any discrepancy found during visual inspection shall be tracked through SAP notification
- i. The distance between rungs, cleats, and steps shall not exceed 12 inches and shall be uniform throughout the length of the ladder including the last landing.
- j. Steps are spaced not less than 8 inches and not more than 12 inches apart, as measured between centerlines of the steps.

7.6. Personal Fall Arrest System (PFAS):

All persons involved in working at heights shall be provided with suitable PPEs in accordance to risk assessment:

7.6.1. Anchorage and lifelines:

- a. Should be used if it has been assessed that falls cannot be prevented using fall prevention system.
- b. Anchorage and lifelines are part of personal fall prevention/ arrest systems that include:

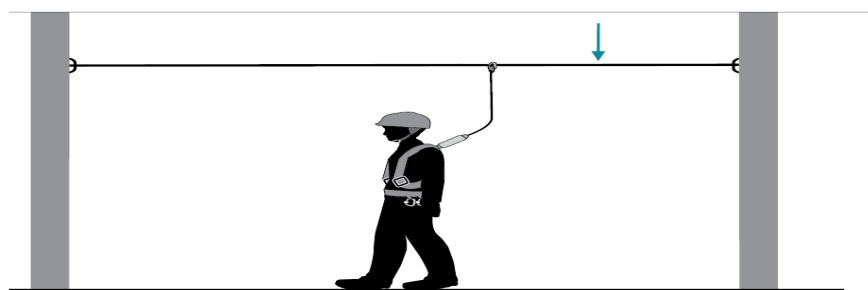
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- Travel restraint system to exclude persons from falling risks;
 - Personal fall arrest system to arrest a fall in an inadvertent accident; and
 - Work positioning system
- c. Anchorage and lifelines shall be of good construction and come with the relevant certificate of conformance to recognised international standards.
- d. Anchorages and lifelines shall be selected, installed, inspected and certified to be suitable and adequate.

7.6.2. Lifelines:

Are flexible or rigid lines connected at least to one end to a reliable anchor to provide a link between the anchor and the user of a personal fall prevention/ arrest system. Lifelines should meet the following minimum characteristics:

- a. Safe rating high enough to withstand forces generated in the event of a fall; and
- b. Installed in a proper manner such that they do not interfere with any other items of equipment or clothing or create any tripping hazards.
- c. If the lifeline is left at the site of the usage, it must be inspected by before each use.
- d. Life line shall not be used as protection from falling from height if the length of lanyard is longer than the fall from height distance.



Life Line

7.6.3. self-retracting lifeline (SRL):

Is type of lifeline which involves a spring-loaded reel to ensure the shortest possible length of lifeline between the user and the reel. Following shall safety features shall be considered when using SRL:

- It must be tested and inspection by manufacture

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- SRLs must not be used in the horizontal plane;
- SRLs must not be attached to a horizontal lifeline
- A lanyard (with or without energy absorber) must not be attached between the SRL and the full body harness as this may increase the fall distance; and attachment of more than one user to each SRL must not be allowed as overloading may occur.

Examples of Self Retracting Lines (SRLs)



7.6.4. Safety Harness

Full body fall protection system shall be worn by personnel working at elevation over 1.5 meters or above with work permit except in the following cases:

- a. Working on platforms protected by railings equal or greater than 1.5 m height.
- b. Work at the distance more than 3 meter from normal railings when the railing is less than 1.5m height.
- c. When you are not protected against falling (no railing e.g. roof, tanks etc.)
- d. Area (s) which are defined and declared as safe by safety (foreseen with nets etc....) with additional controls as per the JSA/Risk assessment

7.6.5. Safety harness inspection:

- a. Each piece of fall arrest equipment must be identified with a serial number.
- b. Manufacturer's original tag shall be retained on the harnesses and lanyards.
- c. The user shall carry out pre inspection of Harness and Lanyard before each use.
- d. Quarterly inspection and on return inspection will be carried out by the Material safety agent
- e. Annual inspection shall be carried out by third party for the first 5 years. After 5 years, six-month inspection shall be carried out by the third party.


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- f. Detailed ‘Safety Harness/Lanyard Inspection Checklist’ is provided as Appendix (to this procedure).
- g. Inspection results shall be recorded and maintained by the fire department.
- h. Inspected tag will be hanged on the safety harness after passing the inspection.
- i. Contractors shall provide fall arrest equipment’s to their staff unless stated otherwise in the contract.
- j. Contractors fall arrest equipment and staff shall comply with the requirement of this procedure.
- k. Contractors fall arrest system equipment shall have the manufacture tag. Tag shall refer to ANSI Z 359.1-2007 or any other international standard.
- l. Inspection record of the fall arrest system shall be kept at site for verification purpose.
- m. Contractor user department shall ensure that fall arrest system including safety harness are inspection as per this instruction.
- n. Safety harness with thigh & shoulder straps, attached to a safety line which is not longer than 4 feet and is securely anchored, above the belt height, to a suitable strongpoint or fixture.
- o. For scaffolders, 100% fall protection is required. This means that two lanyards or a Y-lanyard is required per harness and that one lanyard needs to be connected when transferring between anchorage points.

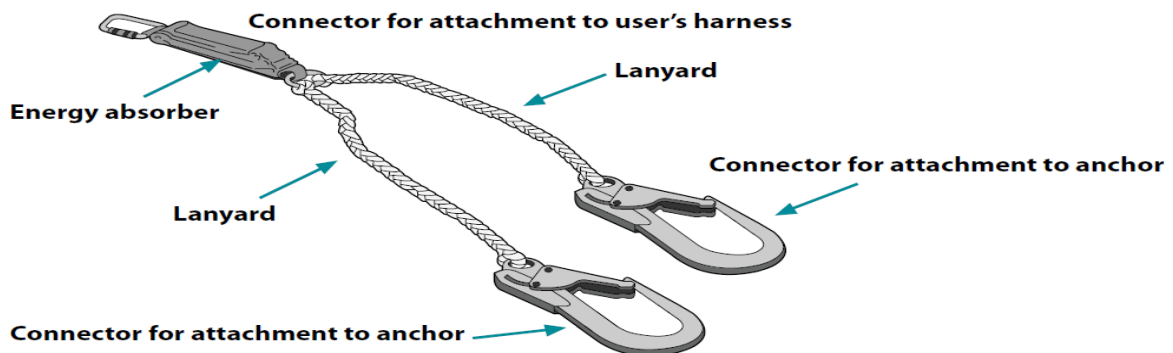
7.6.6. Lanyard:

A lanyard is flexible line of rope, wire rope, or strap which is used to secure the body belt or body harness to a deceleration device, lifeline, or anchorage. These must be ANSI certified and inspected prior to each use.

- a. When using fall arrest equipment, it is important to position your anchor point as high as possible and use lanyard as short as possible or use retractable arrest block.
- b. lanyard shall be rigged in such a manner that the person cannot free fall more than 6 feet or contact a lower level.
- c. Do not tie knots in a lanyard while it is attached to an anchorage (tied off point); this will reduce the strength of the lanyard.
- d. Use caution when working near equipment that is hot. Lanyards can be damaged if they come in contact with hot pipes or other hot equipment.
- e. When not in use, lanyards should be wrapped around the body and attached to the harness to prevent tripping or snagging. Never drag the lanyard.

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- f. Lanyards and vertical lifelines must have a minimum breaking strength of 5,000 pounds
- g. anchorage should be positioned above the user where possible. This will help to ensure that there is as little slack in the users' lanyard as possible.
- h. Lanyard shall be tied off 100 % all the time.




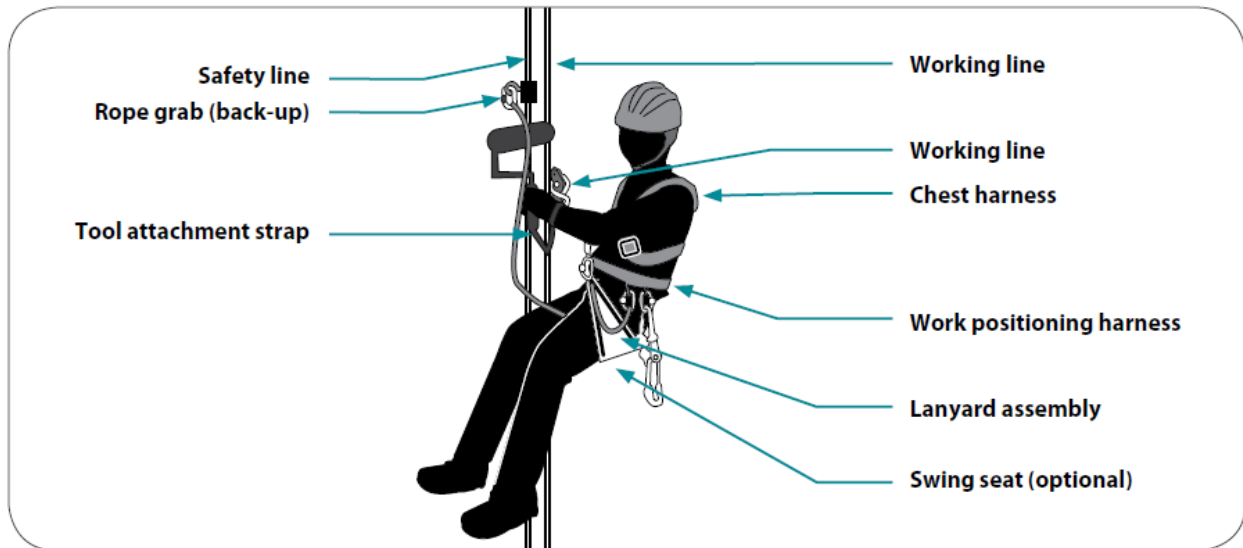
7.6.7. Safety Net:

- a. Based on risk assessment safety nets shall be provided at high risk areas.
- b. Safety nets shall be provided when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical. Where safety net protection is required, operations shall not be undertaken until the net is in place and has been tested.
- c. Nets shall extend 8 feet beyond the edge of the work surface where employees are exposed and shall be installed as close under the work surface as practical but in no case more than 25 feet below such work surface. Nets shall be hung with sufficient clearance to prevent user's contact with the surfaces or structures below. Such clearances shall be determined by impact load testing.
- d. The mesh size of nets shall not exceed 6 inches by 6 inches. All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers and shall bear a label of proof test. Edge ropes shall provide a minimum breaking strength of 5,000 pounds. Forged steel safety hooks or shackles shall be used to fasten the net to its supports.

7.6.8. Industrial Rope access system:

This system is only allowed when other form of access is not reasonably practicable. This system is designed to access areas for work such as window-cleaning, maintenance on high rise equipment and other forms of maintenance. Rope access systems require a high level of competency from the users and therefore, other means such as MEWPs and which require less skill to operate, should be used if it is reasonably practicable to do so.

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- a. All rope access work must be planned and carried out in accordance with the International Rope Access Trade Association (IRATA) International Code of Practice (ICOP).
- b. To ensure safety during industrial rope access system operations, it is important to address at least the following key elements:
 - Detail method statement with clear roles and responsibilities
 - A detail risk assessment (JSA) and lift plan.
 - Rescue Plan
 - Competency of crew and supervisor (LEVEL-1 for Technician and LEVEL-3 for Supervisor)
 - Tested and certified rope access equipment as per IRATA & ICOP.
 - Permit to work system
 - Task should only be employed after due consideration has been given to assess that it is a suitable method and that all control measures are in place to allow the work to be carried out safely.
 - Each working party (crew) must have at least one Supervisor (LEVEL-3) Technician who is responsible for the direct planning and supervision of the work.
 - All crew members shall be medically fit for the task.

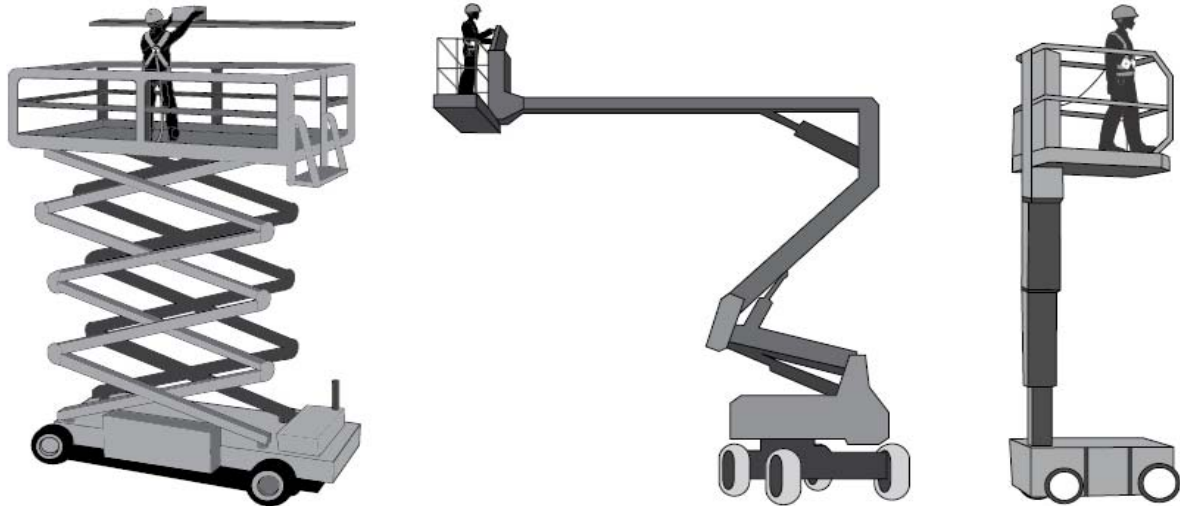
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- All personnel involved in Rope Access operations must be trained and assessed in accordance with the IRATA (International Rope Access Trade Association) training scheme.
- Persons assigned to perform rope access works shall be competent in working at heights, in addition to having undergone structured and documented rope access training (IRATA).
- Personnel should be competent in the level of responsibility assigned to them (e.g., workers being able to conduct self-rescue, supervisors being able to supervise and ensure a rope access team works safely).
- Task team size must be assessed and established for each work situation. Each team should consist of at least two members, Rope access personnel must not work alone in case assistance is required in an emergency.
- The equipment used can be determined through the method statement or risk assessment (JSA) process, which shall be carried out before each task. Equipment selected shall be suitable and adequate for industrial rope access and be compatible as a system. Always use the equipment in accordance to the manufacturers' user instructions.
- Only equipment that has a current certificate of the safe working load or minimum, or other certification as to reliability, should be used.
- Pre-use inspection shall be performed by supervisor and technician shall ensure that equipment should be protected from damage during course of use.
- An industrial rope access system should be configured and used in a manner to protect persons from falls. One of the key elements includes having two independently anchored ropes for each person.
- An industrial rope access system can be extremely dangerous if used by an inexperienced or untrained user or if used in an improper manner, so it shall be designed, assessed and supervised by trained and competent person (Subject Matter specialist).

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7.7. Mobile elevated work platforms:

A mobile elevated work platform (MEWP) is a mobile machine consisting of a work platform surrounded by an edge protection system with controls and an extending structure that is intended to position persons, tools and materials at heights. Examples of MEWPs include scissor lifts, boom lifts and vertical personnel platforms.



- a. Whenever work required to use MEWP equipment, its required detail Risk assessment (JSA).
- b. Prior to deploying MEWPs, thorough planning is needed; a site assessment of the area and ground on which the MEWP is required to operate should be conducted. This is to identify hazards associated with the task and the need for any additional corresponding risk control measures.
- c. MEWPs are available in various rated capacities, working heights and reach; some are intended for indoor use only, while others are designed for rough terrain. A suitable and adequate MEWP should be selected for the task to be undertaken.
- d. The selected MEWP shall be:
 - Inspected and certified by QAPCO approved 3rd party certification body with six-month validity.
 - Operated according to the manufacturers' specifications and design intent (e.g., safe working load limit, terrain type, outriggers deployment)
 - Equipped with all safety devices as per manufacturers' specifications. There must be no unauthorized modification, bypass or removal of any such devices.
 - MEWP operator shall only competent operators to operate MEWPs and he must be trained, certified by 3rd party.
- e. Operator shall ensure that:

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- All persons on the MEWP use appropriate PPE (for work at heights), including a travel restraint system anchored to the manufacturers' designated anchor point inside the MEWP.
 - All persons maintain a firm footing on the MEWP floor – climbing on guard-rail or the use of other devices to achieve additional height or reach is prohibited; and
 - When other moving equipment or vehicles are present, additional precautions (e.g., barricade, traffic management measures) shall be taken he should ensure safe distance.
- f. MEWPs are not designed to transfer personnel from one level to another, or for persons to enter/ exit the work platform at height. Therefore, transferring of personnel at work at height is prohibited by MEWP.
- g. All persons are able to utilize 100 percent tie-off
- h. All MEWP or associated lifting devices shall be proof-tested to 125% of their rated load as manufacture defined frequency.

7.8. Man-Riding basket:

Man riding basket is used to lift person by crane and considered as critical lifting activity. Following precautions must be taken before allowing man-riding lift activity.

- a. All lifting equipment, lifting gears and man-riding basket shall be 3rd party inspected as per IN-223- ID-113 (lifting equipment inspection).
- b. Use Safety harness.
- c. A detail risk assessment (JSA) and lifting plan shall be prepared.
- d. Ensure the compliances of IN-250-HSE-13 lifting instruction.

7.9. Emergency Rescue Equipment's and Systems:

QAPCO have a trained rescue response team available 24hrs a day. However, the availability of rescue personnel, ladders or other equipment requirements at work site should be evaluated during job planning stage and JSA.

In the event of emergency supervisor at job site **MUST** contact the fire department and request their attendance to assist in rescue and provision of specific medical care.

7.9.1. Rescue Plan:

All jobs requiring the use of a fall arrest system and meeting any of the following conditions, a work at height rescue plan shall be prepared.

- Fragile Roof, Slope Roof, (Storage Tank top, Compressor shelter top etc.)
- Suspended scaffold above 20 meters
- Work at height in confined space
- Restricted Vehicle access: Limitation of emergency vehicles entrance.

The rescue plan will be prepared and approved by the fire department.

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8. RECORDS:

The following records shall be maintained in support of this Instruction:

#	Record ID	Record name	Responsibility
1	NA	Scaffolding tagging Register	Scaffolding contractor
2	NA	Scaffolding inspection checklist	Scaffolding contractor
3	NA	Rescue Plan	F&E
4	NA	Safety harness inspection	Material safety agent

9. APPENDIX

9.1 Scaffolding Inspection Checklist - **IN-250-HSE-16-CL01**

9.2 Scaffolding Register Sheet - **IN-250-HSE-16-F01**

9.3 Full body harness checklist - **IN-250-HSE-16-CL02**