

OPS-SP-0013

Fall Protection Policy

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1 Purpose

The purpose of this Fall Protection policy is to establish the minimum requirements to ensure compliance with applicable regulatory requirements and criteria for fall protection when work at heights is required.

2 Scope

This policy shall apply to all Ampirical employees and contract partners at all Ampirical facilities and work locations. From here on, the term personnel shall be used to include both employees and contract partners.

3 Responsibility

3.1 Senior Leadership

- Allocate resources and demonstrate leadership to ensure conformance with the requirements in this standard.
- Hold personnel responsible and accountable for implementation of this standard.

3.2 Ampirical Safety

- Provide governance and oversight by setting the requirements of this standard.
- Provide support as needed through subject matter expertise and other necessary resources to support implementation of this standard.
- Review, authorize, and approve the content of this standard.
- Ensure continued conformance with and suitability of this standard.
- Provide subject matter expertise and other necessary resources as needed to support implementation of this standard.

3.3 Employees and Contract Partners

- Understand and adhere to the requirements of this standard, as well as any other applicable health and safety standards, best practices, and work procedures.
- Perform only work activities for which they have been trained, qualified, and are authorized to complete.
- Complete all fall protection training as required.
- Conduct pre-use inspection prior to using any fall protection equipment.
- Select fall prevention/protection equipment that will prevent a fall or minimize the fall.
- Wear/utilize fall prevention/protection equipment as required and as designed.
- Maintain and store fall protection equipment to prevent damage or contamination.
- Immediately stop work for observed or perceived unsafe activities.
- Report unsafe or hazardous working conditions and incidents.

4 Definitions

4.1 100% Fall Protection

- Personnel are required to facilitate the use of personal fall protection 100% of the time when moving at heights or transitioning between anchor points or lifelines. Double lanyards or double retractable lanyards are typically used to facilitate 100% fall protection.

4.2 Aerial Lift

- Any mobile device designed to elevate personnel and provide a temporary working surface which can be easily moved from one location to another. Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground:
 - Extensible boom platforms; aerial ladders; articulating boom platforms; vertical towers; and a combination of any such devices.

4.3 Anchorage

- A secure point of attachment for lifelines, lanyards, or deceleration devices.

4.4 Body Belt (Safety or Climbing Belt)

- A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

4.5 Brace

- A rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure.

4.6 Competent Person

- One who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to personnel, and who has authorization to take prompt corrective measures to eliminate them

4.7 Connector

- A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or dee-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

4.8 Dangerous Equipment

- Equipment, such as vats, tanks, electrical equipment, machinery, equipment or machinery with protruding parts, or other similar units, that, because of their function or form, may harm a person who falls into or onto the equipment.

4.9 Deceleration Device

- Any mechanism, such as a rope grab, rip-stitch lanyard, specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline lanyard, which dissipates a substantial amount of energy during a fall arrest or limits the energy imposed on a person during fall arrest.

4.10 Designated Area

- A distinct portion of a walking-working surface delineated by a warning line in which personnel may perform work without additional fall protection.

4.11 Elevated Work

- Any work that will require a person to use personal fall protection systems, working in areas above 4 feet (1.2 meter) from grade without permanent installed fall protection (e.g., guardrails), work on scaffolds, work on ladders greater than 4 feet (1.2 meter) high above grade, work using an aerial lift, and any work over dangerous equipment.

4.12 Equivalent

- Alternative designs, equipment, materials, or methods that the employer can demonstrate will provide an equal or greater degree of safety for personnel compared to the designs, equipment, materials, or methods specified in this subpart.

4.13 Fall Protection

- Any equipment, device, or system that prevents a person from falling from an elevation or mitigates the effect of such a fall (e.g., guardrail system, personal fall arrest system, travel restraint system, positioning system, or designated area).

4.14 Fall Restraint System

- A combination of an anchorage, anchorage connector, tether or lanyard, and body harness used to eliminate the possibility of a person going over the edge of a walking-working surface.

4.15 Fixed Ladder

- A ladder, including individual-rung ladders that is permanently attached to a structure, building, or equipment. It does not include ship's stairs or manhole steps.

4.16 Full Body Harness

- An interconnected set of straps that is secured about a person in a manner that distributes the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the full body harness to other components of a personal fall arrest system.

4.17 Guardrail System

- A vertical barrier, consisting of, but not limited to, top rails, midrails, and posts, erected to prevent personnel from falling off a scaffold platform or walkway to lower levels.

4.18 Hoist

- A manual or power-operated mechanical device to raise or lower a suspended scaffold.

4.19 Hole

- A gap or open space in a floor, roof, horizontal walking-working surface, or similar surface that is at least 2 inches (5 cm) in its least dimension.

4.20 Ladder Safety System

- A system designed to eliminate or reduce the possibility of falling from a ladder. A ladder safety system usually consists of a carrier, safety sleeve, lanyard, connectors, and body harness. Cages and wells are not ladder safety systems.

4.21 Lanyard

- A flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

4.22 Leading Edge

- Means the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

4.23 Lifeline

- A component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

4.24 Low-Slope Roof

- A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

4.25 Lower Levels

- Those areas or surfaces to which a person can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

4.26 Maximum Intended Load

- The total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to walking-working surface at any one time.

4.27 Opening

- A gap or open space in a wall, partition, vertical walking-working surface, or similar surface that is at least 30 inches (76 cm) high and at least 18 inches (46 cm) wide, through which a person can fall to a lower level.

4.28 Personal Fall Arrest System

- A system used to arrest a person's fall. It consists of an anchorage, connectors, a body belt, or body harness and may include a lanyard, deceleration device, lifeline, or combinations of these.

4.29 Personal Fall Protection System

- Any system consisting of an anchorage, body harness, and a means of connecting them, designed to provide protection from falling (e.g., positioning system, travel restraint system) or to safely arrest a person's fall if one occurs (e.g., personal fall arrest system, ladder safety system).

4.30 Personnel

- Individual employed or contracted to perform work at an Ampirical facility or work location. The term personnel shall be used to include both personnel and contractors.

4.31 Platform

- A work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.

4.32 Positioning Device System

- A body belt or body harness system rigged such that an employee cannot free fall more than 2 feet and to allow a person to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

4.33 Qualified Person

- One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

4.34 Rated Load

- The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.

4.35 Rope Descent System (RDS)

- A suspension system that allows personnel to descend in a controlled manner and as needed, stop at any point during the descent. A rope descent system usually consists of a roof anchorage, support rope, a descent device, carabiner(s) or shackle(s), and a chair. A rope descent system also is called controlled descent equipment. Rope descent systems do not include industrial rope access systems.

4.36 Safety-Monitoring System

- A safety system in which a competent person is responsible for recognizing and warning personnel of fall hazards.

4.37 Scaffold

- Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting personnel or materials or both.

4.38 Self-Retracting Lifeline/Lanyard

- A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal personnel movement, and which, after onset of a fall, automatically locks the drum and arrests the fall (designed to limit a fall to two feet or less).

4.39 Snap-hook

- A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap-hooks are generally the locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection. Snap-hooks automatically close and lock when released and require at least two separate, consecutive movements to open.

4.40 Steep Roof

- A roof having a slope greater than 4 in 12 (vertical to horizontal).

4.41 Walking/Working Surface

- Any surface, whether horizontal or vertical on which a person walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which personnel shall be located in order to perform their job duties.

4.42 Walkway

- A portion of a scaffold platform used only for access and not as a work level.

4.43 Warning Line System

- A barrier erected on a roof to warn personnel that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect personnel in the area.

5 Requirements

5.1 General

- Working from heights, falling objects and overhead hazards are among the common sources of exposure for serious work-related incidents and injuries. As a result, personnel must be protected from fall hazards through controls, safe work practices, training, and personal protective equipment when needed. Contractors must also comply with this Fall Protection Policy or follow their own fall protection program meeting at least the minimum requirements of this standard.
- The following are required:
 - Pre-job planning for activities involving work at height in alignment with the requirements of the Job Safety Analysis / Job Hazard Analysis process.
 - Inspecting work areas and performing hazard assessments to identify, evaluate, and control fall hazards.
 - Addressing work at heights in high wind, storm, or lightening conditions. Reference Appendix F – Wind Conditions for Elevated Work.
 - Selecting and using fall protection, when applicable, appropriate for the type of work and the level of exposure. See Appendix B for potential fall exposures and minimum fall protection needed to address these exposures.
 - Conducting field observations to verify safe behaviors and use of fall protection and make corrections where needed.
 - Ensuring uncontrolled fall hazards are immediately protected or flagged and guarded by personnel until protection can be placed; and
 - Reporting fall exposures, or deficiencies in fall protection systems.

5.2 Assessment of Fall Hazards

- A competent person must review all existing fall hazards and work activities to ensure the risk assessment and identification of appropriate controls and equipment. A field hazard assessment must be conducted to ensure falling objects and fall hazards are identified, and the required controls are implemented prior to starting work and when planned or newly identified changes or hazards in work activities occur.

5.3 Control of Fall Hazards

- If a fall hazard cannot be eliminated, it must be controlled in the following preferred order of control:
 - Eliminate exposure.
 - Install physical barriers or passive fall protection, such as guardrail systems or covers (Refer to section Passive Fall Protection).
 - Use fall restraint systems, work positioning systems or personal fall arrest systems whichever is appropriate for the exposure (Refer to section Use of Fall Protection Systems).
 - Use specialized fall protection systems such as a warning line system or safety monitoring system if standard fall protection systems are not practical or feasible.

5.4 Fall Protection Purchase and Design

- Fall Protection must meet the following requirements:
 - ANSI Z359 Fall Protection and Fall Restraints Standards and tested in accordance with ASTM F887 Standard Specifications for Personnel Climbing Equipment.
 - Reviewed and approved by a competent person in the Safety Department prior to the purchase of new or new types of fall protection equipment.
 - Equipped with appropriate D-rings for the situation in which the equipment will be used, such as:
 - Back D-ring, located in the center of the back near shoulder level for full body harnesses.
 - Front/chest D-rings free fall distance is limited to 2 feet or less such as ladder systems.
 - Side D-rings used for work positioning or when used as part of a climbing system such as for pole climbing.
 - Equipped with snap-hooks on any connector including carabiners that are the automatic locking type that requires at least two separate, consecutive movements to open.
 - Equipped with the appropriate length and design, retractable or not retractable lanyards.

5.5 Inspection, Cleaning, and Storage of Fall Protection Equipment

- The following must be implemented for inspection of fall protection equipment:
 - Inspections are conducted:
 - By a qualified person, prior to each use.
 - By a competent person prior to initial placement in service; and at least annually, or more frequently if required by the manufacturer's instructions.
 - The annual inspection is evident to the fall protection user, such as marked on a label or with the addition of a tag.

- Inspections are performed in accordance with manufacturer recommendations. Inspections include looking for damage or deterioration, cuts, tears, abrasions, mold, or evidence of stretching, alterations or modifications or deterioration from ultraviolet rays, welding, fire, acid, or other corrosive damage, distorted hooks or faulty hook springs, tongues that are unfitted to the shoulder of buckles, loose or damaged mountings, nonfunctioning parts, or wear, or internal deterioration.
- Fall protection equipment does not exceed its lifespan by ensuring the following:
 - When any part of a personal fall arrest system is subjected to impact loading, it is removed from service immediately, tagged “DO NOT USE” or similar and either destroyed or not used until inspected by the manufacturer and is approved for re-use.
 - When any part of a fall protection system that shows signs of damage, deterioration, or impact load, it shall be immediately removed from service and tagged “Do Not Use” or similarly; and
 - If the manufacturer does not specify a useful lifespan for equipment, then it shall be determined by a competent person through the annual inspection process.
- When storing fall protection, ensure the following:
 - Store in accordance with manufacturer’s instructions.
 - Keep equipment clean.
 - Keep storage area clean, dry, and free of exposure to fumes, heat, direct ultraviolet light, sunlight, and corrosive elements; and
 - Prohibit storage of harnesses next to batteries, on the ground, in water, mud or areas where they could mold, mildew or dry rot or where there is exposure to other damaging elements.

5.6 Use of Fall Protection Systems

- Passive Fall Protection to control fall exposures must be utilized first and in accordance with the system specifications in Appendix A, Passive Fall Protection System Specification and Design Requirements.
- Active Fall Protection systems must be:
 - Selected and provided for the exposures and conditions where fall protection is required (See Appendix B for potential fall exposures and minimum fall protection needed to address these exposures). The selection shall include:
 - Identification of the required equipment including type and length of lanyards to be used based on the fall exposure or equipment being used.
 - Verification that all fall protection system components are compatible.
 - Active fall protection systems must also be:
 - Inspected, maintained, installed, and utilized in accordance with manufacturer’s instructions.
 - Included in training programs when new types of fall protection equipment are purchased.

- Ensures 100% fall protection when exposed to falls of 4 feet or more and fall protection is required. Examples include using ladder climbing systems, when transferring from one structure to another, aerial lift to another, when climbing towers or poles.
 - Not used for rigging, pulling, or hoisting.
 - Connected to a suitable anchorage.
 - All lifelines and lanyards shall be protected against being cut or abraded.
 - D-ring extenders or anchorage extenders are not permitted for leading edge work.
- Personal Fall Arrest use requirements are as follows:
 - Use is in accordance with manufacturer instructions and recommendations.
 - Fall arrest systems shall include the use of a full body harness; be limited to personnel with a combined tool and body weight of 310 pounds or less unless the equipment is specifically designed and rated for more weight; and be connected appropriately which means:
 - To suitable anchorage points, overhead or above the shoulder. If overhead or above the shoulder anchorage points are not feasible or if specific fall protection anchorages account for a lower anchorage point, alternate height anchor points may be selected as long as suitable fall arrest system components are used in combination with appropriate anchor points. Suitable anchorage points also include the manufacturer's designated point in aerial lifts.
 - Used with appropriate length and type, either shock absorbing or self-retracting lanyard for the exposure. Used with a lanyard of the length and design specified by the employer or manufacturer, whichever is most conservative.
 - In a manner personnel are only exposed to the least free fall possible and sufficient clearance exists to ensure no contact with a lower level or obstruction in the event of a fall. (Example: A 6-foot shock absorbing lanyard would require an anchorage point of at least 18 feet overhead.)
 - Worn with the shock absorbing end of the lanyard attached to back D-ring and the other end attached to the anchorage unless specified otherwise by the manufacturer.
- When using a Fall Restraint System, ensure that it:
 - Is installed such that the person is not exposed to falls of any distance.
 - Includes use of a full body harness attached to securely installed restraint lines or a safety belt designed for use in restraint systems.
 - Excludes the use of rope grab devices are for fall restraint applications unless they are part of a fall restraint system designed specifically for use of a rope grab by the manufacturer and used in accordance with the manufacturer's instructions.
 - Does not use lanyards equipped with a shock absorber or other deceleration device.
- When a Positioning Device System is used, it must:

- Require use of a full body harness, unless a climbing belt is used for conducting pole climbing, tower climbing or tree climbing for Vegetation, Transmission or Distribution type work covered under 29CFR1910.269. See Climbing Belts section of this standard.
 - Not use lanyards equipped with a shock absorber or other deceleration device.
- If using a Horizontal lifeline, ensure the following:
 - Horizontal lifelines are designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
 - If horizontal lifelines that may become vertical lifelines are used, the device used to connect to the horizontal lifeline shall be capable of locking in both directions on the lifeline.
- When identifying acceptable anchorages and unacceptable anchorages, including those listed in this section and Appendix C for Anchorage Points:
 - The designed anchorage point specified by the manufacturer shall be utilized for aerial lifts, scissor lifts, and other similar equipment.
 - Scaffolds may only be utilized as an anchorage point: by personnel working from the scaffold; when approved in writing by the scaffold manufacturer; and when the Business function approves this method of anchorage.
 - For suspended work platforms, anchorages shall be independent of any anchorage used to suspend employees or platforms on which employees work.
 - For mobile work platforms approved for powered industrial trucks, anchorages shall be attached to an overhead member of the platform, at a point located above and near the center of the platform.

5.7 Fall Protection for Specific Equipment

- Aerial Lifts
 - To ensure personal fall protection is used in aerial lifts and requirements, personnel are trained in proper use and operation, and the requirements in Appendix G, Aerial Lifts are met.
- Ladders shall be used as follows:
 - Utilized in accordance with manufacturer's instructions, this standard and any additional business function requirements and maintained safe for use. For use requirements and maintaining ladders safe for use, see Appendix H, Ladder accessories such as stabilizers, levelers and others provided shall be compatible with the ladder and intended for the type or areas of work performed.
 - Capable of supporting the maximum intended load. Mobile ladder stands and platforms must be capable of supporting four times the maximum intended load.
 - Have slip-resistant steps or rungs.
 - Made of non-conductive materials such as fiberglass where electrical hazard exists.
 - Selected and provided of appropriate height, material, and ANSI duty rating for the work to be performed. Portable ladders may be used to reach locations that require inspection or for work activities of short duration. ANSI Type III ladders shall not be used. Refer to Appendix H for ANSI duty rating and portable ladder requirements.

- Use of non-rigid ladders shall only be approved on a limited basis and case-by-case basis. Non-rigid ladders such as rope, chain ladders or strap ladders shall not be used without:
 - Written approval from safety or supervisor.
 - An inspection of the ladder
 - A briefing on climbing technique when using the ladder.
 - Identification of specific fall protection equipment to be used.
- Scaffolds
 - The following are general requirements for scaffolds. Refer to Appendix A for scaffold specific requirements. Scaffolds shall be:
 - Constructed to meet or exceed the design requirements specified by OSHA for the type of scaffold being utilized and by the manufacturer whichever is more conservative.
 - Only assembled, disassembled, or modified by a qualified person or under the supervision of a qualified person.
 - Inspected for visible defects by a competent person before each work shift in which they are utilized, and after any occurrence which could affect a scaffold's structural integrity.
 - Equipped with a guardrail system along all open sides/ends with exception of where self-closing gates are used for the platform entrance or where not possible due to equipment obstructions.
 - Equipped with a self-closing gate unless infeasible due to design or obstructions.
 - Tagged to reflect the status of use (e.g., red unsafe for use/under construction or modification, yellow – fall protection required, green safe for use).
 - Prohibited from use by personnel during storms, lightening or high winds (See Appendix F Wind Conditions for Elevated Work); when covered with ice or snow, unless involved in removing ice or snow from scaffold; and when red-tagged indicating they are under construction, incomplete or otherwise unsafe, unless they are the qualified person(s) involved in the scaffold assembly, disassembly or modification.
 - The following restrictions shall be adhered to:
 - Scaffold bracing shall not be used for access or climbing unless designed for that purpose. Integral prefabricated scaffold access frames may be specifically designed and constructed for use as ladder rungs and may be used for access to platforms.
 - Mid-rails, guard rails, or scaffold bracing shall not be used as walking working surfaces for access, working, or climbing. Integral prefabricated scaffold access frames specifically designed and constructed for use as ladder rungs may be used for access to platforms.
 - Scaffolds and scaffold components shall not be loaded in excess of the maximum intended loads or rated capacities, whichever is less.
 - Debris shall not be allowed to accumulate on platforms.

- Brick, tile, block, or similar material shall not be stacked higher than 24” on the scaffold deck.
- Ladders, boxes, barrels, makeshift platforms, or other similar items shall not be used on scaffolds to increase the working level height.

5.8 Additional Requirements for Specific Types of Activities

- When hoisting personnel, the following requirements shall be met:
 - Forklifts, front loaders etc. shall not be used to lift employees unless designed to do so.
 - The use of a crane to hoist employees on personnel platforms is prohibited except when the erection, use and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, work platform or scaffold would be more hazardous or is not possible because of structural design or worksite conditions. If the Business Function hoists personnel in man baskets, the Business Function shall have a process to ensure they meet requirements for personnel platform use, equipment and device setup, trial lift and inspection, proof testing, lifting during high wind, lightening, storm or other dangerous weather conditions, and pre-lift meeting in accordance with 29 CFR 1926.1431.
 - Follow procedures for a critical lift in accordance with the Material Handling Standard when lifting personnel with a crane.
 - Hoisting personnel is prohibited while equipment is traveling, and equipment travel must be restricted to a fixed track or runway.
 - Hoisting personnel within 20 feet of a power line that is energized up to 350 kV, and hoisting personnel within 50 feet of a power line that is energized over 350 kV, is prohibited, except for work conducted by qualified workers covered under subpart V of this part (Power Transmission and Distribution). Refer to the Electrical Standard for acceptable distances for qualified and non-qualified workers.
- If engaged in specified work such as leading-edge work, a site-specific fall protection plan must be developed that uses alternative fall protection methods if they can demonstrate infeasibility of conventional fall protection. In some cases, warning lines may be used under these provisions. Refer to Appendix E, Leading Edge, and Roof Access Fall Protection Requirements for additional requirements.

5.9 Non-Standard Fall Protection

The use of non-standard fall protection is a last resort and only allowed when other options for fall protection have been exhausted. If using non-standard fall protection, the Business Function shall develop and implement a process that ensures its use as part of a fall protection system that meets the requirements in the Active Fall Protection section. A competent person shall also ensure non-standard fall protection is used according to the following requirements:

- For use of rigging for fall protection/prevention:
 - New rigging equipment such as shackles, wire ropes or synthetic slings that have not previously been used for rigging and lifting activities can be used as part of a fall protection system when documented, approved through a written fall protection plan reviewed and approved by a competent person or other similar written process and labeled/tagged with “For Fall Protection Use Only.”

- All components shall be rated for 5000 lb. or greater.
- For use of crane hooks or load lines for anchorages, this method shall not be utilized for work considered general industry work. For construction work and in situations where a crane hook or other part of the load line is needed as an anchorage, all of the following are required to be documented:
 - A qualified person has determined that the set-up and rated capacity of the crane/derrick (including the hook, load line, and rigging) meet or exceeds the requirements in 1926.502(d)(15).
 - The equipment operator shall be at the work site and informed that the equipment is being used for this purpose; and
 - No load is suspended from the load line when the personal fall arrest system is anchored to the crane/derrick's hook (or other part of the load line).
- For work on low-sloped roofs, a combination of warning lines 6 feet (and in some cases 10 feet) back from the edge in combination with monitors in place of personal fall protection equipment or guardrails may be used.

5.10 Protection from Falling Objects/Overhead Hazards

- The process shall include:
 - Keeping personnel at a safe distance from overhead work via flagging/signs, barricades, guardrails, or other approved means.
 - Use of guardrail systems with standard toe-boards on platforms, scaffolds or walking working surfaces where personnel can pass beneath or where moving or rotating machinery or other equipment is located underneath and dropped or falling materials could create a hazard.
 - Use of physical barriers such as canopy structures or nets in high traffic areas.
 - When hard hat use is required.
 - Use of safe housekeeping, storage and staging practices including:
 - The use of positive controls such as matting over grating, securing/tying off equipment or material, use of tool lanyards, or other dropped object prevention methods.
 - Safe storage and staging practices prohibiting storage of any tools, equipment, or other materials where they could be dislodged or shift and fall onto personnel below. Examples: storage on equipment, structures or work surfaces, toolboxes, next to guardrails, hoist areas or stairways, fixed ladder, or scaffold entrances.
 - Measures to be taken such as the use of paneling, netting, screens or equivalent if storage above toe-boards is required. Storage above toe-boards or the additional protection provided is prohibited.
 - Ensuring tools, material and debris is removed from scaffolds prior to dismantling.
- To ensure personnel operating aerial lifts, mobile scaffolds, other similar equipment and cranes or equipment approved to hoist personnel etc. are protected from overhead hazards. The process shall include:
 - Determination of work tasks that could result in overhead hazard.

- Assessment of the work area or equipment for overhead hazards including energized power lines or equipment, damaged equipment that could fall, damage in the surroundings, obstructions such as overhead equipment or objects including ceilings, doors, beams, and piping; and
- Establishment of required controls including distance from energized power lines or equipment and other hazard control methods. Maintaining distance from energized power lines (Refer to Material Handling Standard and Electrical Safety Standard for requirements).

5.11 Rescue Plan

- A rescue plan is designed to ensure readiness and prompt rescue, self-rescue, or assisted rescue, should a fall occur. It includes the following:
 - Designation of responsibility for rescue personnel and notification of additional emergency services whether these services are internal or external.
 - Identification of equipment required including self-rescue equipment or suspension trauma relief devices.
 - Verification of readiness can be accomplished through drills and observations. Drills shall be conducted at least annually or more often if required by the Business Function.
 - Ensuring immediate availability of additional equipment that may be needed for rescue such as ladders, stair towers, mobile scaffolds, additional aerial devices etc.
 - Verification of proper operation of lifting/lowering devices/controls for aerial lifts.

6 Training

6.1 Initial Training

- All personnel exposed to fall hazards of four (4) feet or more shall receive training to recognize fall hazards and understand procedures to minimize those hazards. Training shall cover:
 - Applicable procedures.
 - Fall hazard recognition.
 - Fall prevention and control methods; and
 - Safe use requirements and limitations for access equipment (e.g., ladders, scaffolds, aerial lifts).

6.2 Hands-On Training

- All personnel required to wear fall protection equipment shall receive instruction and hands-on demonstrations in the use and care that is specific to type of equipment or system being used.
- Instructions shall cover:
 - Identification of a primary support and secondary fall protection systems.
 - Methods to select, inspect, use, store, and maintain fall protection equipment according to manufacturer's instructions.
 - Inspection of fall protection systems and components to determine whether they are safe for use.
 - Anchorage selection, use, strength, and location requirements.

- Verification techniques to ensure fall protection is secured.
- Proper anchorage techniques.
- Proper use of 100% fall protection including how to maintain 100% fall protection when required for climbing and transferring from one structure or work surface to another.
- Descent control and distance and clearance requirements, as applicable.
- Suspension or orthostatic intolerance prevention.
- Fall Protection and rescue procedures.
- Hands-on/practical demonstrations shall include:
 - Donning and fit of equipment.
 - Assembly and disassembly of access equipment.
 - Selecting of anchorage points; and
 - Proper use of lanyards (See Appendix D, Lanyard Use).

7 Documentation and Recordkeeping

All records and documents identified in the table below shall be maintained in accordance with Ampirical policy Records Management and Retention. The HSE Department shall ensure all records and documents are managed per the requirements of the Ampirical standard EHS Records Management and Document Control EHS-GOV-3.4.1.

Document/Record
Fall Protection Equipment Inspection Records
Training Records

8 Program Review and Evaluation

To assess the overall health of the program, Ampirical will include a formal review of the Working at Heights Standard as part of the management review process.

9 References

29 CFR 1910.23 Ladders
29 CFR 1910.29 Fall protection systems and falling object protection-criteria and practices
29 CFR 1910.132 General requirements
29 CFR 1910.140 Personal fall protection systems
29 CFR 1910.269 Electric power generation, transmission, and distribution
29 CFR 1910 Subpart D Walking-Working Surfaces
29 CFR 1910 Subpart F Powered Platforms, Man lifts, and Vehicle-Mounted Platforms
29 CFR 1910 Subpart I Personal Protective Equipment
29 CFR 1926.1053 Ladders
29 CFR 1926 Subpart M Fall Protection
29 CFR 1926 Subpart L Scaffolds
ANSI Z359 Fall Protection and Fall Restraint Standard

10 Appendix A - Passive Fall Protection System Specification and Design Requirements

Equipment Description	Minimum Strength	Height (Top of equipment to working surface)	Other Design/Installation
Guardrails	200 pounds applied two inches from the top in downward or outward direction	Top rail - be 42 inches (plus or minus 3 inches) above the walking/working surface. Mid-rail/Intermediate rails shall be installed at a height midway between the top edge of the top rail and the walking/working surface.	Have a surface that prevents injuries such as punctures and lacerations and prevents snagging of clothing. Exception: For mid-rail - Unless there is a wall or parapet wall at least 21 inches high located between the top rail and the working surface.
Toeboards	50 pounds applied in any downward or outward direction	Minimum vertical height of 3.5 inches with no more than ¼ inch clearance to the floor; or minimum height of 2.5 inches when used around vehicle repair, service, or assembly pits.	Are erected along the exposed edge of the overhead walking-working surface for a length that is sufficient to protect personnel below. Are solid or do not have any opening that exceeds 1 inch at its greatest dimension.
Cover	Twice the weight of personnel, equipment, and materials that may be imposed on the cover at any one time:	NA	Secured when to prevent accidental displacement by the wind, equipment, or personnel; and Marked with the word "HOLE" or "COVER" to provide warning of the hazard.
Safety Nets	5000 pound minimum breaking strength of border rope Must pass or be capable of absorbing an impact force equal a 400-pound drop test or certified by employer or competent person before being used as a fall protection system, whenever relocated, after major repairs or at 6-month intervals if left in place. Have a maximum mesh size not exceeding 6 inches by 6 inches	NA	Be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet below such level. Extend sufficiently from outer edge of the walking/working surface and have an unobstructed fall area.

11 Appendix B – Fall Exposures

- Certain working conditions or situations with fall exposure shall require fall protection. These include but are not limited to the following:
 - Open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment shall be guarded with a standard guardrail system.
 - Protection shall be provided from falling into or onto impalement hazards, such as reinforcing steel (rebar), exposed steel, or wood.
 - Holes into which a person can trip, step in or through shall be guarded by a cover of standard strength and construction or a standard guardrail system.
 - Aerial lifts designed for the person to ride in the basket or bucket while the aerial lift is being driven/moved.
 - A work surface with an unprotected side or edge which is 4 feet or more above a lower level shall be protected from falling by the use of a guardrail system or personal fall restraint or arrest system. This includes:
 - Working from loading docks. Loading docks and other open sided floors greater than 4 feet above the ground shall be protected by guardrails or handrails. When there is use of fall protection systems on the working side of a platform used as a loading dock an equivalent means of fall protection may be used.
 - Excavations shall be protected by guardrail systems, fences, or barricades when the excavations are not readily seen because of a visual barrier or obstruction from plain view.
 - Vehicles or rolling stock on which personnel shall be located in order to perform their job duties shall be protected by fall arrest systems, fall restraint systems, or positioning device systems. Where suitable anchorages cannot be provided or when the use of fall protection creates a greater hazard, a safety monitor (edge watch) or alternative measures shall be put in place to help prevent a fall.
 - Removal of manways, hatchways, equipment, or doors exposing fall hazards.
 - If one of these systems is not available or is infeasible during leading edge work, a fall protection plan must be developed and implemented to protect the worker from fall hazards.
 - Accessing company owned or customer owned roofs or attics. (If engaged in work that requires access to a customer roof or attic and the use of fall protection is determined infeasible, they shall document a fall protection plan outlining the required inspections and specific work practices required to prevent falls.) Additionally, the fall protection plan shall be communicated to affected employees.
 - Work where there is the potential for tripping in, stepping into, or falling through holes (including skylights) shall be protected by using personal fall arrest systems, placing covers over the holes, or erecting guardrail systems around these areas.
 - Ladderway openings or ladderway platforms shall have guardrail systems with toe-boards on all exposed sides, except at the entrance. Entrances shall be designed with an offset or self-closing gate.

- Stairway floor openings shall be guarded by a standard fixed guardrail system on all exposed sides except where there is entrance to a ramp, stairway, or ladder.
- Wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 4 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.
- Hatchways and chute holes shall be guarded by one of the following:
 - Hinged covers of standard strength and construction and a standard guardrail system with only one exposed side.
 - When the hole is not in use, the hinged cover shall be closed, or the exposed side shall be guarded at both top and intermediate positions by removable standard guardrail systems; or
 - A removable standard guardrail system with toeboards on not more than two sides of the hole and fixed standard guardrail system with toeboards on all other exposed sides. The removable guardrail shall be kept in place when the hole is not in use and shall be hinged or otherwise mounted so as to be conveniently replaceable.
- Examples of additional work activities that shall be addressed by fall protection include but are not limited to:
 - Work on/from personnel platforms used with cranes.
 - Work on portable or fixed Ladders, scaffolds, and aerial lifts.
 - Utilizing well, pit, shaft, repair pits, service pits, or assembly pits.
 - Climbing poles or towers. Before allowing employees to subject elevated structures, such as poles or towers, to such stresses as climbing or the installation or removal of equipment may impose, the employer shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the expected loads, the employer shall brace or otherwise support the pole or structure so as to prevent failure.

12 Appendix C – Anchorage Points – Strength Requirements and Unacceptable Anchorage Points

Equipment	Minimum Anchorage Strength
Full body harness Shock absorbing lanyards D-Ring extenders/Anchor straps Horizontal and vertical lifelines	5,000 pounds or designed, installed, and used under the supervision of a qualified person as part of a complete personal fall protection system that maintains a safety factor of at least two
Climbing lines (used in vegetation)	Approximately twice the weight of the climber.
Climbing belt	Anchorage for work-positioning equipment shall be capable of supporting at least twice the potential impact load of an employee's fall, or 13.3 kilonewtons (3,000 pounds-force), whichever is greater
Rope grab lanyards (secondary restraints)	5,000 pounds
Self-Retracting Lanyard (SRL)	3,000 pounds if SRL is designed to limit free fall to two feet or less
Restraint/Travel Restriction Lanyard	3,000 pounds or twice the maximum expected force required to restrain the person from exposure to the fall hazard
Work Positioning Lanyards	Twice the potential impact load of a person's fall

12.1 Unacceptable Anchorages

- The following anchorages shall not be used:
 - Spring-loaded wire from anchorage connectors. These would typically be for piping.
 - Handrails or guardrails unless approved through an engineering evaluation. Handrails or guardrails of aerial lifts shall not be utilized as anchorages.
 - Crane hooks or rigging equipment unless utilized in accordance with the Non-Standard Fall Protection section of this standard.
 - Scaffolds for those working outside a scaffold or if not approved by the scaffold manufacturer.
 - Adjacent poles, structure, or equipment when in an aerial lift.

13 Appendix D – Lanyard Use

Do	Do Not
Secure lanyards to the designated parking point on fall protection equipment when not in use. This will prevent the lanyard from becoming a trip hazard or getting caught while the employee is in transit.	Tie knots in lanyards, as this reduces the lanyards strength as much as 50%.
Utilize lanyards that will not allow more than 4 feet to fall and will not allow the person's body to contact the ground.	Allow lanyards to cross sharp surfaces where damage to the lanyard could occur.
Select the lanyard that allows the least amount of free fall.	Attach any snap-hook, unless designed for the connection, to any of the following: – Directly to the webbing, rope, or wire rope. – Another snap-hook. – To a D-ring to which another snap-hook or other connector is attached. – To a horizontal lifeline. – To any object which is incompatibly shaped. – In a manner where the snap-hook keeper could become disengaged and release.
Ensure additional length that may be added by use of D-ring extensions or anchorage straps are calculated in the free fall distance.	
Attach lanyards with compatible components.	

14 Appendix E – Leading Edge and Roof Access Fall Protection Requirements

Leading edge work and safe rooftop access and/or work require fall protection suitable for the type of fall exposure. Fall protection options for leading edges and roofs and fall protection requirements per distance from a leading edge are provided in the tables below.

Table 1. Leading Edge / Roof Access Fall Protection Requirements

Fall Exposure	Required Protection Method
Floor Hole	• Railing and toe board or floor hole cover
Leading Edges	• Guardrail Systems • Safety Net Systems • Personal Fall Arrest Systems
Low Slope Roofs	• Guardrail Systems • Safety Net Systems • Personal Fall Arrest Systems
Elevated Open-Sided Platform, Floor, or Runway	• Guardrail and toeboards
Steep Roofs	• Guardrail Systems with toeboards • Safety Net Systems • Personal Fall Arrest Systems
Unprotected Sides and Edges	• Guardrail Systems

Table 2. Fall Protection Requirements per Distance Worked from a Leading Edge

Distance	Fall Protection Requirement
Work performed less than 6 feet from the roof edge	• Guardrail • Safety Net • Fall Arrest/Restraint system
Work performed at least 6 feet but less than 15 feet from the roof edge	• Guardrail • Safety Net • Fall Arrest/Restraint system OR • A designated area may be used only when work being performed is both infrequent and temporary (in this case personnel shall not be permitted to work outside the designated area)
Work performed 15 feet or more from the roof edge	• Guardrail • Safety Net • Fall Arrest/Restraint system OR • A designated area (in this case fall protection is not required if the work is both infrequent and temporary) OR • A rule prohibiting personnel from going within 15 feet of the roof edge without fall protection

15 Appendix F – Wind Conditions for Elevated Work

- High wind is wind of velocity that the wind could:
 - Blow an employee from an elevated location.
 - Cause an employee or equipment handling material to lose control of the material.
 - Expose an employee to other hazards including but not limited to, trees or tree limbs, contact with energized electrical lines or equipment. or exposure to rigging and material handling activities.
 - Work shall cease when working at heights and the following wind conditions exist unless approved as outlined below. Blanket approvals are prohibited.

Equipment	Maximum Miles per Hour
Supported scaffolds	20-25 MPH
Single point suspended scaffolds	20 MPH
Two-point suspended scaffolds	25 MPH
Scissor Lifts	Use in accordance with manufacturers' recommendations. According to OSHA, this is normally less than 28 MPH.
Aerial Lifts	Use in accordance with manufacturers' recommendations. According to OSHA, this is normally less than 28 MPH.

- If work becomes necessary when wind conditions exceed those listed above, the following is required:

- Establish controls required to protect personnel from the hazardous effects of wind.
- Stop criteria is established.
- Limited duration.
- Be in writing.
- Approval from the following:
 - The qualified person conducting the work at heights.
 - A competent person in fall protection.
 - The supervisor of the work.
- The approvals shall not exceed wind restrictions equipment from the manufacturer or the maximum established by OSHA, which is 40 miles per hour for activities except material handling which is 30 miles per hour.

16 Appendix G – Aerial Lifts

- Use of aerial lifts shall meet the following requirements:
 - Only authorized persons shall operate an aerial lift.
 - Users shall comply with manufacturer instructions to include by not limited to fall protection, platform load limits and vertical or horizontal reach.
 - Aerial lifts shall be operated from stable surfaces, and shall not be operated from trucks, trailers, scaffolds, or similar equipment. Bucket trucks designed to be operated from the bucket or lower controls are acceptable.
 - Ground conditions and terrain where aerial lifts will be operated shall be evaluated. The aerial lifts shall be operated utilizing outriggers and appropriately sized outrigger pads as needed or required.
 - To prevent being ejected from aerial lifts, personnel working from aerial lifts shall be protected from being hit by vehicles through the use of traffic signs, traffic control measures, barrier vehicles, or a combination of these methods.
 - An aerial lift truck shall not be moved when the boom is elevated in a working position with personnel in the basket, except for equipment which is specifically designed for this type of operation.
 - Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition. The person/personnel with knowledge of how to operate the lift controls shall be available to immediately operate the controls if needed.
 - The designed anchorage point specified by the manufacturer shall be used.
 - Securing, belting, or anchoring off to an adjacent pole, structure or equipment shall not be allowed.
 - Guardrails shall be in place and access gates or openings shall be closed and secured before raising the platform.
 - Personnel shall always stand firmly on the floor of the bucket or lift platform.
 - Personnel working from or riding in any aerial lift device shall wear a fall restraint system or personal fall arrest system with the lanyard attached to the boom or bucket as designated by the aerial lift device manufacturer. Riding in aerial lift devices is only allowed in situations allowed by the manufacturer.

- Personnel shall not climb on or lean over guardrails or handrails, sit or climb on the edge of the basket, or use planks, ladders, or other devices for a work position. If entry/exit on aerial lifts is needed, the following are required:
- Personnel may enter or exit an aerial lift if the following are met:
 - Fall protection such as guardrails or a fall arrest system is used while the personnel move between the lift and the working surface and if permitted by the manufacturer.
 - During entry to and egress from the lift, a worker may tie-off to the lift (if the lift is designed to withstand the vertical and lateral loads imposed by the employee's movement itself or by an arrested fall) or to an appropriate nearby structure.

17 Appendix H – ANSI Duty Rating and Portable Ladders

17.1 ANSI Ladder Types

- When feasible, the following ANSI types of ladders for field, plant and construction or similar work shall be used:
 - Type I – Extra Heavy Duty – Load Capacity 375 pounds
 - Type IA – Extra Heavy Duty – Load Capacity 300 pounds
 - Type IAA – Heavy Duty – Load Capacity 250 pounds
- ANSI Type II – Medium Duty – Load Capacity 225 pounds may be used in office areas, labs, or other areas that are considered by the Business Function as light industrial areas.

17.2 Minimum Use Requirements for Portable Ladders

- The following minimum requirements for portable ladders shall as follows:
 - Use in accordance with manufacturer's recommendations, labeling, and safety warnings.
 - The following are prohibited: wooden ladders (when feasible and all other options/solutions have been sought out; makeshift ladders; tying, splicing, or fastening ladder sections together unless specifically designed for that; or using ladders as scaffolds or as supports for scaffold boards.
 - Ladder placement with secure footing and stability which includes:
 - Having the feet of the ladder firmly on the ground.
 - Using the ladder on a firm, level, non-slippery surface to the extent feasible. If it is not feasible, the ladder should be leveled and secured.
 - Placing or leaning ladders on or against stable bases and not leaned against boxes, barrels, or other unstable bases to obtain additional height.
 - Securing or stabilizing ladders such as portable straight, extension ladders or other ladders that are not self-supporting.
 - Ladders shall be secured when an adequate point to secure the ladder exists. Secured means the use of a positive control such as a strap, ladder hooks, or other approved securing device.
 - If an adequate securing point does not exist, the ladder should be stabilized, either by a person holding the ladder, a ladder stabilizer or when securely placed in manholes or pits where the ladder cannot move.

- When ladders are used to transition to another surface, the ladder shall be secured or held.
 - Barricading or blocking off the ladder when used in high traffic areas (doorways, active passageways, driveways, active construction sites, etc.). Ladders shall not be placed in front of doors opening toward the ladders unless the door is open, locked, or guarded.
- For extension ladders:
 - Use the four-to-one ratio: that is, place the ladder so its feet are one foot away from what it leans against for every four feet in height to the point where the ladder rests.
 - Positioning of portable straight ladders or extension ladders at least 3 feet above the work location or the walking working surface to be accessed.
- For step ladders:
 - Top cap and steps as labeled on stepladders are not used as steps or for standing/working.
 - Do not mount the step ladder from the side unless held or secured.
- Utilize the following safe work practices:
 - Face the ladder.
 - Keep the body between the side rails.
 - Keep hands free, do not carry objects when ascending and descending ladders.
 - Maintain 3 points of contact (two hands and a foot or two feet and a hand. Working from a self-supporting portable ladder (stepladder) or platform ladder does not require three points of contact.
 - Do not perform tasks that require pushing, pulling, or reaching overhead.
 - Portable ladders are not moved, shifted, or extended while a worker is on them.

17.3 Maintaining Portable Ladders for Safe Use

- Portable ladders shall be maintained safe for use. The process shall include requirements for:
 - Storage in accordance with manufacturer recommendations.
 - Maintaining legible manufacturer labels and safety warnings.
 - Visual inspection for deficiencies prior to use and following any incident that could cause damage to the ladder.
 - Tagging defective ladders out of service and not be used until repaired in accordance with manufacturer's requirements.
 - Prohibiting the use of paints or other materials that could hide the defects in ladders.
 - Placing ladders should be placed in a safe position, folded, retracted and laying on the side or otherwise secured, when not in use or in transport.
 - Identification of safe transport requirements (whether carrying the ladder through an area or transporting on a truck).

18 Appendix I – Specific Scaffold Types

18.1 Mobile Scaffolds

- If mobile scaffolds must be used, including scissor lifts, the following guidelines shall be adhered to:

- Overhead clearance from power lines or other possible safety hazards shall be checked before moving any mobile scaffold.
- Mobile scaffolds are plumb, level, and squared.
- Mobile scaffolds are locked or otherwise secured to prevent any movement while occupied.
- Forklifts, front loaders, or other heavy equipment are not used to support unless specifically designed for it.
- Scaffold casters and wheels are locked with positive wheel locks and/or wheel and swivel locks or an equivalent means.
- Caster stems and wheel stems in scaffold legs or adjustment screws are pinned or otherwise secured.
- Scissor lifts are considered a type of mobile scaffold by OSHA and shall be used in accordance with the following manufacturer instructions:
 - Ensure guardrails are installed.
 - Do not move while elevated.
 - Wear personal fall protection secured to an anchorage point designated by the manufacturer, otherwise personal fall protection is not required.
 - Select work locations with firm, level surfaces away from hazards that can cause instability (e.g., dropoffs, holes, slopes, bumps, ground obstructions, or debris).
 - Position to prevent contact with line of fire hazards or electrical hazards.

18.2 Suspended Scaffolds

- The use of suspended scaffolds shall meet the following requirements:
 - A competent person shall:
 - Evaluate all direct connections prior to use to confirm that the supporting surfaces are able to support the imposed load.
 - Inspect ropes for defects prior to each work shift and after every occurrence that could affect a rope's integrity.
 - All suspension scaffolds shall be tied or otherwise secured to prevent them from swaying, as determined by a competent person.
 - When lanyards are connected to horizontal lifelines or structural members on single-point or two-point adjustable scaffolds, the scaffold shall have additional independent support lines equal in number and strength to the suspension lines and have automatic locking devices.
 - All support devices shall rest on surfaces capable of supporting at least four times the load imposed on them by the scaffold when operating at the rated load of the hoist, or at least one-and-a-half times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater.
 - Guardrails, a personal fall-arrest system, or both shall protect each personnel more than 4 feet above a lower level from falling.
 - When scaffold platforms are more than 24 inches above or below a point of access, ladders, ramps, walkways, or similar surfaces shall be used.
 - When using direct access, the surface shall not be more than 24 inches above or 14 inches horizontally from the surface.

- Emergency escape and rescue devices shall not be used as working platforms, unless designed to function as suspension scaffolds and emergency systems.