UMBC OFFICE OF ENVIRONMENTAL SAFETY AND HEALTH (ESH) WRITTEN PLAN	**TITLE: FALL PROTECTION AND WORKING FROM HEIGHTS**
DATE CREATED: 9/2023	**REVISION: 1.0**

I. PURPOSE

The purpose of this procedure is to set standards for analysis and monitoring of work performed from elevated surfaces, as well as to establish minimum requirements for protection against falls during the performance of work tasks from elevated surfaces.

This procedure is designed to ensure University of Maryland, Baltimore County (UMBC) compliance with the following Occupational Safety and Health Administration (OSHA) regulations:

- 29 CFR 1926 Subpart M – Fall Protection
- 29 CFR 1926 Subpart L - Scaffolds
- 29 CFR 1910 Subpart D – Walking Working Surfaces
- 29 CFR 1926.453 - Aerial Lifts
- 29 CFR 1910 Subpart F – Powered Platforms, Manlifts, and Vehicle-Mounted Working Platforms

II. SCOPE

UMBC employees, including student employees, shall not be required or permitted to perform work within 15 feet of an unprotected side or edge without the use of an appropriate fall protection system, where there exists a fall hazard of 4 feet or greater to a lower level.

Fall protection is not required under the following conditions:

- When conducting rooftop inspections prior to or following rooftop construction or maintenance activity for the purpose of determining workplace conditions.
    - **Note**: The use of any tools, devices, or equipment shall be considered performing a work-related task and would require the use of fall protection.
    - A minimum of two people shall be present during a rooftop inspection.

- When performing work that is greater than 15 feet from an unprotected leading edge and the work is considered both temporary and infrequent.
    - Temporary is defined as a task that takes less than two (2) hours to complete.
    - Infrequent is defined as a task that is performed on an as needed basis, such as an equipment breakdown or emergency repair, or scheduled work that takes place at a frequency of monthly or greater.
    - A designated competent person must be present during the work and enforce a work rule that prohibits employees from going within 15 feet of the leading edge.

Requirements for Contractors

Contractors who perform work from heights on UMBC campus shall be required and expected to have a comprehensive fall protection program in place, and are responsible for furnishing all equipment and personnel resources required to safely perform elevated tasks. The program must meet or exceed all applicable OSHA and Maryland Occupational Safety and Health (MOSH) requirements.

III. DEFINITIONS

- *Aerial lift* - any vehicle-mounted device used to elevate personnel. Also known as a mobile elevating work platform (MEWP).
- *Anchorage* - a secure point of attachment for equipment such as lifelines, lanyards, or deceleration devices.
- *Competent person* - a person who can identify existing and predictable hazards in any personal fall protection system or any component of it, as well as in their application and uses with related equipment, and who has authorization to take prompt, corrective action to eliminate the identified hazards.
- *Fall hazard* - any condition on a walking-working surface that exposes an employee to a risk of harm from a fall on the same level or to a lower level.
- *Fall protection* - any equipment, device, or system that prevents an employee from falling from an elevation or mitigates the effect of such a fall.
- *Fixed ladder* - a ladder with rails or individual rungs that is permanently attached to a structure, building, or equipment. Fixed ladders include individual-rung ladders, but not ship stairs, step bolts, or manhole steps.
- *Grab bar* - an individual horizontal or vertical handhold installed to provide access above the height of the ladder.
- *Guardrail system* - a barrier erected along an unprotected or exposed side, edge, or other area of a walking-working surface to prevent employees from falling to a lower level.
- *Ladder* - a device with rungs, steps, or cleats used to gain access to a different elevation.

- *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.

- *Leading edge* – The edge of a floor, roof, or formwork for a floor or other walking or 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.

- *Personal fall arrest system* - a system used to arrest an employee in a fall from a walking-working surface. It consists of a body harness, anchorage, and connector. The means of connection may include a lanyard, deceleration device, lifeline, or a suitable combination of these.

- *Personal fall protection system* - a system (including all components) an employer uses to provide protection from falling or to safely arrest an employee's fall if one occurs. Examples of personal fall protection systems include personal fall arrest systems, positioning systems, and travel restraint systems.

- *Platform* - a walking-working surface that is elevated above the surrounding area.

- *Portable ladder* - a ladder that can readily be moved or carried, and usually consists of side rails joined at intervals by steps, rungs, or cleats.

- *Qualified person* - a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

- *Scaffold* - any temporary elevated or suspended platform and its supporting structure, including anchorage points, used to support employees, equipment, materials, and other items.

- *Spotter* - A spotter is a second pair of eyes and ears for employees performing certain tasks and operating equipment or machinery. They stand near the equipment or vehicle and feed information to the operator, including directions and things the operator is unable to see or hear by themself. Spotters can also be referred to as observers, signalers, and guides.

- *Through ladder* - type of fixed ladder that allows the employee to step through the side rails at the top of the ladder to reach a walking-working surface, such as a landing.

- *Toe board* - a low protective barrier that is designed to prevent materials, tools, and equipment from falling to a lower level, and protect employees from falling.

- *Travel restraint system* -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.

- *Walking-working surface* - any horizontal or vertical surface on or through which an employee walks, works, or gains access to a work area or workplace location.
- *Warning line* - barrier erected to warn employees that they are approaching an unprotected side or edge, and which designates an area in which work may take place without the use of other means of fall protection.

IV. PROCEDURE

Identification of Fall Hazards

Directors, managers, and others who have authority over departments whose employees will be exposed to occupational fall hazards shall designate and have trained an appropriate number of employees as competent persons.

Competent persons shall be able to appropriately identify fall hazards, ensure appropriate protection measures are in place prior to the beginning of elevated work, and have the authority to stop work when unsafe conditions are observed.

Prior to any work at heights at or exceeding 4 feet, a designated competent person shall:

- Conduct a hazard assessment to determine the types of fall hazards present.
- Determine and select for the authorized employees, the most appropriate and effective method of fall protection for the work to be completed.
- Ensure all necessary fall protection and other required PPE is in use prior to beginning of the work.

Fall Protection Methods

There are several methods that can be utilized to protect workers from a fall. Their effectiveness in protecting workers from falls varies greatly, and the most effective method that is feasible to complete the work should always be utilized. Listed below is the hierarchy of fall protection controls in order of greatest to least effective, and will be further explained in this procedure.

1. Hazard Elimination
2. Passive Fall Protection Systems
3. Personal Fall Protection Systems

Hazard Elimination

Hazard elimination is the most effective (and most preferred) method of protection because it removes any possibility of exposure to a fall hazard. Elimination can be achieved by devising strategies or procedures, or introducing tools or equipment, that allow for the employee to be able to complete the task safely from a stable, non-elevated surface. An example of this is using a reaching device to change a light bulb in a ceiling fixture from the ground.

Passive Fall Protection Systems

Passive fall protection systems are permanently or temporarily installed fixtures that help to prevent a worker from falling or making contact with a lower level.

Types of Passive Fall Protection Systems

Guardrails

- Guardrails must be at least 42 inches in height, plus or minus 3 inches.
- Guardrails may be fixed (permanently attached) or portable (i.e., ballasted guardrails) as long as all other design and strength requirements are met.
- Guardrails must be able to withstand 200 pounds of force in all directions.
- A midrail must be installed halfway between the top rail and the walking working surface if there is not a wall or parapet at least 21 inches high.
- Intermediate vertical members may not be more than 19 inches apart.
- 4 inch toeboards must be installed on guardrails where employees below are potentially exposed to falling objects.
- Temporary (non-penetrating/ballasted) guardrails must meet all of the above requirements and be placed at a distance from the leading edge determined as appropriate by the manufacturer of the guardrail.

Parapets

- Parapets shall be designed to be 42 inches in height (plus or minus 3 inches is permissible).
- Parapets shall be able to withstand the same level of force as guardrails.

Safety Nets

- Safety nets shall only be used when work exceeds 25 feet in height and when other methods of fall protection are determined to not be feasible.
- Nets must be installed as close as possible under the walking working surface, but no more than 25 feet below.
- Nets must extend 8 feet beyond the walking working surface.
- Mesh openings may not exceed 6 inches by 6 inches.

Covers (Holes, Trenches, Other Openings)

- This includes roof and floor drains, missing floor boards, skylights, drilled holes, broken concrete, open elevator shafts, manholes, and concrete openings.
- Must be able to support at least twice the load expected to cross over the cover.

- Coverings must be secured to prevent displacement.
- Must be marked with the words “HOLE” or “COVER”.

Warning Lines

Warning lines (also known as Designated Areas) are a type of passive barrier system that is designed to communicate to workers that they are approaching a fall hazard area. Warning lines do not provide physical protection against falls, and are typically used during rooftop projects where the work area comprises a large area of the rooftop.

Warning Line Requirements:

- Use of warning lines is restricted to low-slope roof top work (no greater than 4:12) and may only be used under the supervision of a competent person.
- Warning lines placed at 15 feet or greater from the leading edge do not require additional fall protection.
- Warning lines may be used as the sole means of fall protection when placed between 6 and 15 feet of a leading edge, provided that the work is both temporary and infrequent.
- Warning lines may not be installed less than 6 feet from a leading edge without the addition of an appropriate fall protection system.
- Work may not be conducted between a warning line and the leading edge without the addition of an appropriate fall protection system.
- Warning lines must be installed at least 6 feet from the leading edge when mechanical equipment is not in use.
- When mechanical equipment is in use, warning lines must be erected at least 6 feet from the edge which is parallel to the direction of the mechanical equipment, and at least 10 feet from the edge which is perpendicular to the mechanical equipment.
- Lines must be flagged at each 6 foot interval with a high-visibility material.
- Lines must be constructed of rope, wire, or chain and have a minimum tensile strength of 500 pounds.
- The line must remain between 34 and 39 inches from the walking working surface.
- Stanchions must be able to withstand at least 16 pounds of force.

Personal Fall Protection Systems

Personal fall protection systems consist of multiple components that, when combined, protect the worker from serious bodily harm or injury from a fall, either by preventing the fall altogether, or arresting the fall to prevent contact with a lower level.

Personal fall protection shall only be implemented when passive/permanent fall protection systems are determined by a competent person to be infeasible.
Personal fall protection is generally placed into the following categories:

- Personal Fall Arrest
- Fall Restraint
- Positioning
- Suspension
- Retrieval

Personal Fall Arrest

A personal fall arrest system is used to stop an employee who falls to prevent contact with a lower level. Personal fall arrest systems do not prevent a worker from falling over a leading edge, and should only be used when all other forms of fall protection are determined to be infeasible.

Components of a Personal Fall Arrest System:

- Full Body Harness
- Anchorage Point
- Connecting Means:
    - Lanyard, Lifeline, Deceleration Device, or a suitable combination.
    - D-Rings, Carabiners, or Snap Hooks

All components must meet the design requirements of the American National Standards Institute (ANSI) Z359 - Fall Protection Code.

Personal Fall Arrest System Requirements:

- Must limit maximum arresting force to 1,800 pounds
- Must be rigged so an employee cannot contact a lower level or free-fall more than 4 feet.
- Limits the maximum deceleration distance traveled to 3 ½ feet.
- Must be able to withstand twice the impact energy of an employee free-falling 4 feet (or, if less, the maximum free fall distance permitted by the system).

Full Body Harness:

- Body belts/waist belts are not permitted for personal fall arrest systems.
- In the event of a fall, the harness shall have a means for the wearer to be able to position themselves upright to prevent suspension trauma while awaiting rescue (such as trauma straps), or must have another means for the wearer to be able to perform self-rescue.

Anchorage Points:

- Must support 5,000 pounds, or, if designed and installed by a qualified person, shall maintain a safety factor of at least 2 (two) to the maximum fall arresting force of the personal fall arrest system.
- Must be independent of any system used to support or suspend platforms.
- Shall only be designed and installed by a qualified person.
- Guardrails or other structural members not specifically designed and installed for anchorage may not serve as anchorage points.

Lanyards and Lifelines:

- Lanyards for fall arrest must be shock-absorbing.
- Lanyards and lifelines must have a minimum breaking strength of 5,000 pounds.
- Lanyards may not exceed 6 feet in length and must be of a length appropriate to prevent contact with a lower level.
- Must be constructed of a sturdy synthetic material.
- Connecting assemblies must have a minimum tensile strength of 5,000 pounds.
- Self-retracting lifelines and lanyards must have a tensile strength of at least 3,000 pounds and limit free fall distance to 2 feet or less.
    - Ripstitch, tearing and deforming lanyards require 5,000 pounds of tensile strength.
- Horizontal lifelines may only be designed and installed by a qualified person, and must maintain a safety factor of two, or twice the maximum arresting force.

D-Rings, Carabiners and Snap Hooks:

- Must be locking or have a means of securing which prevents accidental disengagement.
- Must have a minimum tensile strength of 5,000 pounds.
- Must be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or otherwise becoming damaged or compromised.

Fall Restraint

Fall restraint systems are designed to allow a worker to roam freely within a designated area, but will prevent them from walking or falling over an unprotected edge. The system attaches between the employee and an anchorage point.

Fall Restraint Components:

- Anchorage Point
- Full Body Harness
- Lanyards - must be at a length appropriate to prevent falling over a leading edge.

Positioning System

A positioning device allows a worker to be supported on an elevated vertical surface and work with both hands while leaning against the surface. Positioning systems are not a substitute for, and must be used in conjunction with a personal fall arrest system.

Positioning System Requirements:

- Must not allow a worker to free fall more than 2 feet
- Must be secured to an anchorage point capable of supporting at least twice the potential impact load of a worker's fall, or 3000 pounds (whichever is greater).

Suspension System

A suspension system is typically used for window washing and painting activities. They are designed to allow a worker to raise and lower themselves to perform work along a vertical surface. Suspension systems, like positioning systems, are required to be used in conjunction with a personal fall arrest system.

Suspension System Components:

- Full Body Harness
- Work Line
- Anchorage
- Positioning Device - i.e., a boatswain's chair.

A boatswain's chair system is considered a single-point adjustable suspended scaffold.

Retrieval System

A retrieval system is used for confined space entry and rescue.

Retrieval System Components:

- Full Body Harness
- Retractable lifeline or rescue line
- Tripod and winch

Inspection and Care of Equipment

Personal fall protection equipment shall be inspected prior to use to ensure the equipment is free from damage, tears, rips, excessive soiling, UV damage, absence of labels or tags, or other degradation or defect. If any component of the fall protection equipment does not pass inspection, supervision shall be notified in a timely manner. The equipment must be removed and tagged out of service until it is repaired or replaced. Only a competent person may make the determination if a fall protection system may be returned to service.

Personal fall protection equipment should be cleaned with a mild, non-abrasive detergent and water, or in accordance with manufacturer's recommendations, to keep the equipment in a sanitary condition. Never use alcohol or bleach to clean personal fall protection equipment.

Personal fall protection equipment shall be stored in a clean and suitable place that will not subject the equipment to dirt, grease, oil, abrasion, cutting, or other elements that may damage or compromise the integrity of the equipment.

Fall Rescue Operations

Competent persons who will be responsible for supervising the use of personal fall protection systems shall develop an appropriate plan of rescue in the event of a fall, to include equipment and methods for self-rescue and assisted rescue.

This plan shall be reviewed by all project personnel prior to beginning of any work involving use of personal fall protection.

The rescue plan must contain, at a minimum, the following elements:

- Fall hazards and a description of scenarios in which a fall could potentially occur.
- List of names and contact information of authorized rescue personnel.
- Rescue method(s) and equipment to be utilized, including self-rescue devices, and locations of where devices/equipment are stored.
- Notification procedure for off site emergency response (911 or Campus Police).

To assist departments with creating a rescue plan, a job-specific Fall Protection Plan template is available from ESH for organizational use.

Inspection of Fall Protection Systems

In addition to pre-use inspection, fall protection systems and their components shall undergo scheduled inspections to ensure continued effectiveness and integrity.

Inspection Requirements:

- Passive Fall Protection Systems
    - Shall undergo an annual inspection by a competent person or a third-party inspector.
- Personal Fall Protection Systems
    - Shall undergo an annual inspection by a competent person or a third-party inspector.
    - All components of engineered personal fall protection systems shall undergo an inspection and re-certification by a qualified person every five (5) years. This includes:
        - All Anchorage Points
        - Horizontal Lifelines
        - Vertical Lifelines
        - Ladder Safety Systems
        - Suspension Systems

Any deficiencies identified as a result of inspections shall result in the equipment being tagged as out of service and arranged for repair or replacement. Only qualified third-party service providers may perform repairs on any fall protection systems.

Additional Requirements

- Work from heights that involves the utilization of personal fall protection systems may only be conducted under the supervision of a competent person. Solo or unsupervised work is prohibited.
- Prior to any work involving the use of personal fall protection, the competent person shall complete the UMBC Fall Protection Plan and Fall Rescue Plan.
- Only trained and authorized personnel are permitted to perform work utilizing personal fall protection systems and equipment.
- Design, installation, repair, or modification of personal fall protection systems may only be completed by a qualified person.
- All personal fall protection system components shall be inspected annually by a competent person.

- All personal fall protection systems shall be inspected and recertified by a qualified professional every five years or at the timeframe recommended by the manufacturer.

- Full body harnesses that have been subjected to a fall shall be immediately removed from service, cut into pieces and discarded. All other components of the personal fall protection system that sustained an impact load or were subjected to a fall must be inspected by a competent person prior to placing back into service.

Use of Ladders

Portable Ladders

When using a portable ladder, the following factors are important to consider when selecting a ladder to use:

- Ladder height
- Weight capacity
- Ladder construction material (metal, wood, fiberglass)

General Requirements

- Perform a visual inspection of the ladder prior to each use and remove and tag out of service any ladder that is damaged or otherwise compromised.
- Do not use ladders that have warning or notification labels that are missing or illegible, tag the ladder out of service or discard.
- Never use metal ladders when working on or near electrical equipment.
- Ladders used at heights of six (6) feet or greater require the use of a spotter.
- Do not use ladders on wet, slippery, or unstable surfaces.
- Do not modify or splice ladders to create longer ladders or use them for purposes other than which they were designed, such as for use as platforms, scaffolds, or runways.
- Never stand on top of a ladder to reach an elevated surface. Procure a longer ladder if needed or use an aerial lift.
- If there is a risk of being struck by a falling object or hitting your head on an object on a ladder, a hard hat must be worn.
- Always face the ladder and maintain three points of contact when ascending or descending.

- Use the "4 to 1 Rule" - For every 4 feet the ladder rises, the ladder should be set 1 foot away from the wall.
- Do not hand-carry materials or tools while climbing or descending a ladder, as this can affect personal stability as well as place excess strain on the ladder's weight capacity. Use a tool belt, hand line or other piece of equipment designed to transport materials.

Fixed Ladders

Fixed ladders have specific design requirements depending on factors such as the height of the ladder and the date of installation.

Ladders Installed Prior to January 2017:

- Fixed ladders taller than 20 feet must have cages or other fall protection systems in place.
- Pre-January 2017 ladders are allowed to keep cages in place until November 18th, 2036, at which point all cages must be replaced with an appropriate ladder safety system.
    - **Note:** Any modifications to existing ladders prior to November 18th, 2036 would require removal of the cage and installation of a ladder safety system.

Ladders Installed After January 2017

- Ladders taller than 24 feet require a ladder safety system
- Cages are no longer permitted.

Additional Requirements:

- Ladders must be treated or constructed with a corrosion-resistant material.
- Ladders must have at least 16 inches of rung width.
- Fixed ladders that extend beyond 50 feet must have landing platforms at each 50-foot interval.
- Ladders must have at least 7 inches of clearance between the ladder and the building on which it is installed.
- Ladders must have 42 inch-height grab bar extensions above the access level or landing platform at the top of the ladder.
- Access level extension width must be at least 24 inches, not to exceed 30 inches wide, or 36 inches if a ladder safety system is installed.

Working From Scaffolds

Scaffolds are temporary structures that are used to support workers and their materials during construction, maintenance and repair of buildings and other structures.

General Requirements:

- All scaffolds shall be erected with guardrails or utilize personal fall protection.
- Scaffolds may only be erected, disassembled, moved, operated, repaired, maintained, or inspected by employees who have received appropriate training.
- After scaffold construction, scaffolds must undergo an initial inspection, followed by daily inspection by a competent person prior to use. A scaffold tag shall be placed at the bottom of the scaffold and signed by the competent person after each inspection.
- Inspections should ensure all structural components, joints, rigging, platforms, and other structural or supporting materials are secure and stable, and free of obstructions, slip/trip/fall hazards, catch points, and other defects.
- Work from scaffolds may not be performed during inclement weather such as storms or high winds.
- Any damaged or otherwise compromised scaffolding must be taken out of service and either repaired or disassembled.
- Scaffolds may only be accessed via a stairway or ladder.
- Scaffolding may not be erected or used within ten (10) feet of energized power lines.
- Scaffolding may only be assembled on a level, stable surface and may not be moved, altered, or otherwise modified while scaffolding is occupied.
- Practice good housekeeping and take only what is needed to the scaffold platform to perform the work.
- Hard hats must be worn if there is a risk of falling objects or other material that could potentially strike the head of an occupant.
- Scaffolding must be disassembled for storage after the work is completed. Assembled scaffolding may not be left in place following a job's completion.

Design Requirements:

- Work level height may not exceed 4 times the lowest base dimension of the scaffold.
- All scaffolding must be equipped with toe boards at least four inches in height from the base of the work platform.
- Guardrails are required on all scaffolds exceeding 6 feet in height.

- Scaffold work platforms must be made of an appropriate material (such as steel, aluminum, plywood, or wood planking) and must span the width of the scaffolding except where protected openings are necessary and must be fully braced or otherwise secured.

- Scaffold planking must be able to support its own weight and at least four times the intended load.

- Planking must be made of a scaffold plank-rated material and meet the span and thickness requirements per 29 CFR 1926 Subpart L Appendix A(1)(b) &(c).

Use of Aerial Lifts

Aerial lifts are vehicle-mounted devices that are designed to transport personnel to elevated levels to perform work. They are also referred to as man lifts, personnel lifts, cherry-pickers, and mobile elevating work platforms (MEWPs).

Common types of aerial lifts include:

- Scissor lifts
- Articulating boom lifts
- Bucket lifts (i.e., bucket trucks)
- Single-person lifts/Aerial Work Platforms (i.e., indoor vertical lifts or Genie lifts)
- Telescoping/extending boom lifts

Aerial Lift Inspections

- Aerial lifts shall undergo a pre-use inspection prior to the first operation of the day or shift. These inspections shall be documented.
    - Notify supervision immediately upon identification of a hazard or deficiency during a pre-use inspection. Any aerial lift which does not pass inspection or shows signs of mechanical or physical disrepair must be tagged out and removed from service.
- Aerial lifts shall undergo required quarterly and annual inspections by a trained lift mechanic or other qualified person. Records of these inspections shall be kept on file by the department with authority over the lift.
- Personal fall protection to be worn shall also be inspected prior to lift operation to ensure absence of degradation or defect.
- Only lift manufacturers or an authorized service provider shall be permitted to make repairs or modifications to the lift.

Fall Protection Requirements

- All aerial lift operations shall be conducted with appropriate fall protection at all times.

- Guardrails shall serve as primary fall protection for all single-person/aerial work platform lifts and scissor lifts.
- Gates or entry rails of aerial lifts must be fully closed and secured when the lift is operation.
- An appropriate personal fall protection system shall be worn at all times when operating any boom lift.
- Personal fall protection shall also be worn if any lift requires its use per the lift's Operators Manual.
- Personal fall protection may only be connected to the lift's designated anchorage points.
- Connecting personal fall protection (tying off) to an adjacent structure or equipment is prohibited.

General Requirements:

- A spotter shall be required for all lift operations.
- Aerial lifts shall not be transported when the work platform is in the elevated working position except where specifically designed for this purpose.
- Do not leave lift keys in the ignition or leave a lift running while unattended.
- No lift safety features or devices shall be permitted to be modified or disabled in any fashion.
- Never exceed the load limits set by the lift manufacturer.
- Store lifts in an appropriate location. Electric and battery powered lifts should not be stored outdoors or in non-climate controlled environments.
- Personnel must maintain both feet in contact with the working platform of the lift basket and may not climb out of the basket or sit on the basket edge or railing.
- Personnel may not secure their personal fall protection to an outside structure such as a pole while working from an aerial lift.
- Brakes must always be set when in position for work. Outriggers must be on solid, stable surfaces.
- If the lift must be used on an incline, wheel chocks must be used. Do not exceed the maximum incline slope as set by the manufacturer.
- Aerial lifts should only be transported over smooth paved surfaces. Avoid potholes, grates, and other possible catches or obstructions.
- Platform and ground controls must be available for any boom lifts.
- Unless specifically designed to occupy multiple persons, only one person at a time may occupy an aerial lift basket.

- Unless specifically designed, personnel may not occupy the basket of an aerial lift while it is in transit.
- Do not operate aerial lifts within 10 feet of overhead power lines.
- Do not operate aerial lifts in poor weather conditions, such as heavy rain, thunderstorms, or heavy wind conditions.
- Aerial lifts shall not be used to transport materials or used as a crane.
- Aerial lifts must be stored appropriately after use with the keys removed or otherwise disabled to prevent unauthorized use.
- Be mindful of overhead clearance and any overhead objects when using an aerial lift.

Training Requirements

Personal Fall Protection

- Employees who are potentially exposed to fall hazards that require use of personal fall protection systems must be trained on the following subjects by a competent person:
    - Proper use, care, and inspection of personal fall protection systems and equipment
    - Employees, supervisors, or managers who will serve as Designated Competent Persons must complete training that satisfies OSHA and ANSI Fall Protection Competent Person requirements.

Ladders

Managers must ensure that employees who use ladders at a height of four feet or greater are knowledgeable of the following:

- Appropriate use of ladders
- Selecting the appropriate ladder
- Ladder inspection procedures

Scaffolding

Employees who erect, disassemble, move, operate, repair, maintain, or inspect scaffolds must be trained by a competent person to recognize the hazards associated with the task, including:

- Potential or actual hazards in the scaffold work area including electrical, fall, and falling object hazards, and how to control these hazards.
- Performing scaffold inspections.
- Assembly, maintenance, and disassembly of fall protection systems (i.e., guardrails).
- Understanding the maximum load capacity of the scaffolds

Aerial Lifts

Lift operators shall be required to be trained on the following subjects prior to initial operation:

- Proper operation per the manufacturer operating guidelines and demonstration of proper lift operation and a review of the operator's manual.
- Pre-operation lift inspection procedures.
- Understanding fall protection systems in their relation to lift use, including when fall protection is required when operating a lift, and how to properly inspect, store, and wear fall protection.
- Identifying hazards and unsafe conditions that can arise, including electrical, fall, and falling object hazards.
- Understanding lift load capacities.
- Safe transport of the equipment.

Retraining Requirements

Awareness level training shall be administered on an annual basis to employees who use or operate the equipment referenced in this procedure, such as fall protection equipment, scaffolds, ladders, and aerial lifts. Awareness training can be administered in the form of a safety briefing or toolbox talk, a classroom discussion, or in an online or computer-based format.

Designated Competent Persons for fall protection shall be required to complete competent person-level training every two (2) years.

Operators of aerial lifts (MEWPs) shall undergo refresher training that includes the demonstration of proper operation of the lift to a qualified trainer at a minimum frequency of every three (3) years.

Retraining of employees will also be required in the following circumstances:

- After any accident or near-miss involving working from heights or operating any equipment referenced in this procedure
- The employee is assigned to a different type of equipment, such as a different type of aerial lift.
- Changes in the workplace, work processes, or any equipment referenced in this procedure render current training ineffective
- The employee demonstrates inadequate knowledge on the use or operation of equipment referenced in this procedure that compromises the employee's ability to safely perform assigned job duties.

Contact Environmental Safety and Health if assistance is needed with training requirements or with finding a qualified training provider.

Recordkeeping Requirements

Departments shall be responsible for retaining the following records:

- Records of employee training
- Records of inspection, service, maintenance or repairs to
    - Aerial lifts (MEWPs)
    - Fall protection systems and equipment
    - Scaffolding
    - Fixed or portable ladders

V. ROLES AND RESPONSIBILITIES

Department/Area Managers, Deans, Administrators

- Ensuring employees understand requirements of this procedure.
- Ensuring employees receive appropriate training prior to performing work from heights.
- Ensuring fall protection systems and equipment, lift equipment, scaffolding and ladders receive appropriate inspection, maintenance and repairs in a timely manner.
- Designate and train an appropriate number of supervisory staff to serve as competent persons to be able to identify fall hazards and implement the appropriate fall protection measures necessary to protect staff from those hazards.

Designated Competent Persons

- Provide an operations level of subject matter knowledge pertaining to fall protection equipment and provide supervision and guidance when authorized users perform work requiring the use of personal fall protection systems.
- Select, use, and install appropriate fall protection equipment for authorized users.
- Identify fall hazards and facilitate the correction of safety problems and unsafe conditions that are identified.
- Conduct assessments on elevated work surfaces that meet the criteria and where trained/authorized employees will be exposed to fall related hazards.

Employees

- Abide by the requirements of this procedure and perform work in a safe manner at all times.
- Ensure they have received the appropriate training prior to performing work covered in this procedure.

- Ensure the procurement and use of appropriate personal protective equipment.
- Perform inspections of personal fall protection, ladders, scaffolding, and aerial lifts as required.
- Remove equipment from service and notify supervision if equipment is not found to be in good operating condition.
- Notify supervision or ESH of any safety concerns or unsafe conditions.

Office of Environmental Safety and Health

- Provide consultation and subject matter guidance to impacted departments on fall protection requirements and best practices.
- Perform periodic review and inspection of training records and equipment inspection and service records to ensure continued safety and compliance.
- Assist in the assessment of fall hazards and hazards pertaining to the use of scaffolds, ladders, and aerial lifts and provide consultation on appropriate methods of controlling hazards identified
- Assist with the facilitation of training for fall protection, aerial lifts, scaffold use, and ladder use to affected departments.

VI. REFERENCES

- UMBC Policy VI-13.00.01 - Environmental Safety and Health Management and Enforcement
- UMBC ESH Procedure - General Safety Rules for UMBC Employees
- UMBC Fall Protection Plan
- MEWP (Aerial Lift) Emergency Rescue Plan
- Aerial Lift Pre-Use Inspection Checklist
- MEWP (Aerial Lift) Fall Protection Inspection Form