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Fall Protection Policy

REVISION

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1 PURPOSE AND SCOPE

1.1 Purpose

1.1.1 To provide written procedures and guidelines governing the requirements for fall protection at the Albany Nanotech Complex (ANC).

1.1.2 To ensure that each **individual** on, near, or under a walking/working surface or dangerous equipment or process (horizontal and vertical surface) with an unprotected side or edge which is 4 feet (1.2 m) (General Industry Standard) or more above a lower level shall be protected from falling off, onto, or through working levels; and to protect employees from falling objects by the use of guardrail systems, safety net systems, or personal fall protection systems.

1.1.3 See the Contractor Safety Guide for Construction related standards.

1.1.4 To comply with the regulations outlined in the Occupational Safety and Health Administration's (OSHA) Part 29 Code of Federal Regulations (CFR) 1910.28, 1910.29, and 1926.500.

1.1.5 To ensure that fall protection equipment meets American National Standards (ANSI) Z359.1 "Safety Requirements for Personal Fall Arrest Systems, Subsystems, and Components."

1.1.6 To ensure that untested fall protection systems are prohibited for use at the ANC.

1.2 Scope

1.2.1 This policy applies to **all individuals at the ANC** who may be involved in activities that require the use of fall protection.

1.2.2 This policy establishes the minimum requirements for using fall protection on site. Tenant employees, contractors, and sub-contractors may comply with their own organization's program if it meets and/or exceeds the minimum requirements in this policy.

1.2.3 All **individuals** on site will be notified of the requirement to follow this policy and must comply with the restrictions and limitations imposed upon them during fall protection activities.

1.2.4 All supervisors are responsible for supporting and enforcing this policy to ensure compliance by all.

2 DEFINITIONS

- 2.1 **Anchorage** – Secure point of attachment used for equipment such as lifelines, lanyards, deceleration devices, and rope descent systems.
- 2.2 **Body Harness** – Straps which may be secured about a person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders. The harness is equipped with a means for attaching to other components of a personal fall arrest system.
- 2.3 **Controlled Access Zone (CAZ)** – A safety measure for workers at heights where fall arrest equipment are not able to be used alone (i.e., lanyards), implemented as a type of safety monitoring system such as a guard rail system on a roof.
- 2.4 **Guardrail System** – Barrier constructed to prevent employees from falling to a different level.
- 2.5 **Lanyards** – 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.
- 2.6 **Lifeline** – A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection 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.
- 2.7 **Personal Fall Arrest System (PFAS)** – 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.
- 2.8 **Positioning System** – System of equipment and connectors that, when used with a body harness or body belt, allows an employee to be supported on an elevated vertical surface, such as a wall or windowsill, and work with both hands free.
- 2.9 **Rope Grab** – Deceleration device used on a lifeline to automatically engage and lock the lifeline during a fall.
- 2.10 **Safety Monitoring System** – System whereby a competent person is responsible for recognizing and warning employees of potential fall hazards.

- 2.11 **Self-retracting Lifeline/Lanyard** – Deceleration device containing a drum-wound line that can be slowly extracted from, or retracted into, during normal movement and during a fall, automatically locks and arrests the fall.
- 2.12 **Snap hook** – Connector that consists of a hook-shaped member with a normally closed keeper that may be opened to permit a hook to receive an object and, when released, automatically closes to retain the object.
- 2.13 **Toe Board** – Low protective barrier that is designed to prevent materials, tools, and equipment from falling to a lower level and protect employees from falling.
- 2.14 **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.

3 RESPONSIBILITIES

3.1 Environmental Health and Safety (EHS) Department

- 3.1.1 The EHS Department is responsible for the implementation, enforcement, and maintenance of the provisions outlined in this policy and as specified below:
- Oversee the policies and procedures of the program,
 - Provide guidance on the requirements of the program,
 - Perform fall hazard assessments,
 - Perform fall protection evaluations,
 - Select and establish standard operating procedures for fall protection controls,
 - Aid in the design and selection of fall protection controls,
 - Assist in coordinating activities where fall hazards are present,
 - Understand and articulate the fall hazards and fall protection controls,
 - Provide fall protection safety training,
 - Notify contractors of activities that involve fall hazards, and
 - Evaluate the effectiveness of the policy on an annual basis.

3.2 **All Supervisors** are responsible for supporting and enforcing this policy to ensure compliance by all personnel.

3.3 **Employees** are responsible for understanding the fall hazards associated with their job task and following established fall protection policies and procedures.

4 DETERMINATION OF THE NEED FOR FALL PROTECTION

4.1 Fall protection is required when work is conducted at unprotected heights at or exceeding 4 feet above the lower level or above dangerous equipment or processes. If a fall hazard is present, it must be addressed through either elimination or fall protection. No employee or work operation is exempt from fall protection requirements.

4.2 The following are examples where fall protection shall be utilized:

- When employees are working in a hoist area, they shall be protected from falling 4 feet (1.2 m) or more to lower levels by guardrail systems or personal fall arrest systems.
- When employees are working on walking/working surfaces, they shall be protected from tripping in or stepping into or through holes (including skylights) more than 4 feet (1.2 m) above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes.
- When employees are working at the edge of a well, pit, shaft, or excavation 4 feet (1.2 m) or more in depth, they shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or another visual barrier.
- When employees are working less than 4 feet (1.2 m) above dangerous equipment, they shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards.
- When employees are working 4 feet (1.2 m) or more above dangerous equipment, they shall be protected from fall hazards by guardrail systems, personal fall arrest systems, or safety net systems.
- When employees are performing overhand bricklaying and related work 6 feet (1.8 m) or more above lower levels, they shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or shall work in a controlled access zone.

- When employees are reaching more than 10 inches (25 cm) below the level of the walking/working surface on which they are working, they shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system when a spotter is not utilized.
- When employees are engaged in roofing activities on low-slope roofs with unprotected sides and edges 4 feet (1.2 m) or more above lower levels, they shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, warning line system and personal fall arrest system, or warning line system and safety monitoring system. Or, on roofs 50-feet (15.25 m) or less in width, the use of a safety monitoring system alone (i.e., without the warning line system) is permitted.
- When employees are working on a steep roof with unprotected sides and edges 4 feet (1.2 m) or more above lower levels, they shall be protected from falling by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.
- When employees are working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 4 feet (1.2 m) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 m) above the walking/working surface, they shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.

4.2.1 A spotter should be present to watch the hole, ensure no one passing through the immediate area is unaware of the opening, and attend to the individual entering the floor space.

4.3 When employees are exposed to falling objects, they shall wear a hard hat and implement one of the following measures:

- Erect toe-boards, screens, or guardrail systems to prevent objects from falling from higher levels; or,
- Erect a canopy structure and tether potential fall objects so that those objects would not fall to the ground if they were accidentally displaced; or,
- Barricade the area to which objects could fall and prohibit employees from entering the barricaded area.

- 4.4 When not protected by any other means of fall protection, such as safety nets or proper guardrails, employees shall use a Personal Fall Arrest System (PFAS) which shall consist of a full body harness, lanyards with double locking snap hooks, and an anchor. To achieve the necessary fall protection, employees may need to use a double lanyard system and/or vertical or horizontal lifelines, retractable lifelines, or other such approved devices.
- 4.4.1 Employees shall set up fall arrest equipment so that they can neither free fall more than 6 feet, nor contact any lower object. Anchorage points for fall arrest equipment shall be capable of supporting a shock load and be located above the employee's body harness attachment point where practical.
- 4.4.2 When vertical lifelines are used, each employee shall be protected by a separate lifeline. The lifeline shall be properly weighted at the bottom and terminated to prevent a device such as a rope grab from falling off the line.
- 4.4.3 Horizontal lifelines shall be limited to two persons at one time between supports.
- 4.4.4 Prior to each use, employees shall visually inspect all fall arrest equipment for cuts, cracks, tears, abrasions, undue stretching, overall deterioration, mildew, operational defects, heat damage, or acid or other corrosion. Equipment showing any defect shall be withdrawn from service.
- 4.4.5 All fall arrest equipment subjected to impacts caused by a free fall or by testing shall be removed from service.
- 4.4.6 Employees should store all fall arrest equipment in a cool, dry place not subjected to direct sunlight.
- 4.4.7 Employees shall not use fall arrest equipment until they have been trained in its use.
- 4.4.8 Fall arrest equipment shall not be used for any other purpose such as tow ropes or hoist lines.
- 4.5 Supervisors shall ensure fall protection is available and used, as required, for all employees they supervise.
- 4.6 Employees working on wall forms or rebar shall wear a body harness lanyard and/or positioning device when exposed to a fall more than 6 feet. Position devices shall be rigged to prevent a free fall greater than 2 feet.
- 4.7 Stairs, ladders, or ramps shall be provided for all access ways where there is a change in elevation greater than 19 inches.

- 4.8 When guardrails are used for fall protection, they shall consist of a top railing intermediate rail and toe board. The top rail shall have a vertical height of 42 inches. The mid-rail shall be at 21 inches, and the toe board at 4 inches.

5 FALL PROTECTION SELECTION

5.1 General

- 5.1.1 Fall protection must be selected and provided based on the hazards to which the employees are exposed and before that employee begins the work that requires the use of fall protection.

- 5.1.2 The development of a functional fall protection program shall include at least the following elements:

- Identification and evaluation of fall hazards.
- Selection and use of fall hazard controls.
- Established equipment uses, inspection, and maintenance guidelines.
- Employee training.

- 5.1.3 The EHS department must be consulted and approve all temporary fall protection measure selections prior to implementation.

5.2 Personal Fall Arrest System

A personal fall arrest system consists of a full body harness and a motion slowing lanyard. These will be used with a variety of specialty fall devices for protection in vertical, horizontal, and sloped roof applications. All personal fall arrest systems must be ANSI-approved.

5.2.1 Vertical

Vertical lifelines with rope grab hardware are used to provide fall protection on swing stage scaffolds, boatswain's chairs, steel, or tower work, and in elevator shafts, to name only a few. Matching the harness, lanyard, and rope hardware to each application is best accomplished with the end user's input. There are several variations to vertical protection, including self-retracting lifelines, so each location requires coordination between all parties.

5.2.2 Horizontal

Tie-offs to walk lines (attaching a lanyard to a static attach point such as a structural member or to a retractable reel) have an inherent hazard that training, and supervision can eliminate. Horizontal work attachments can create fall exposures well more than 6 ft. (1.8 m) if the worker(s) do not keep the point of attachment at shoulder height or above or use an attach point which would cause the lanyard to fall below the worker's shoulder height.

5.2.3 Sloped Roof

When a personal fall arrest system is selected, then the fall exposure is not necessarily a direct fall, but a slip down a slope to the edge. Using static lines or an attachment point at the peak of a roof provides fall protection if the employee is prevented from falling more than six feet or contacting any object during a fall. Again, there are a variety of devices available and several types of lifelines. Coordination between all parties is necessary to avoid a system which appears adequate but may create exposures greater than six feet if misunderstood.

5.3 **Guardrail Systems**

5.3.1 Elevated work platforms must include a guardrail system around the entire periphery. If the guardrail system is removable or can be lowered, the means used to secure it in the normal operating position shall be readily accessible for inspection and maintenance.

5.3.2 The guardrail system must include a top-rail around the upper periphery. The height of the top-rail above the platform must be 42 inches +/- 3 inches (1.07m +/- 0.08m). The guardrail must include a mid-rail midway between the top-rail and the platform surface. Each top-rail, mid-rail, or equivalent vertical barrier must be able to withstand a concentrated test load of 200 pounds applied at any point in all directions. Equivalent structures may be used in place of top-rails provided they meet the strength requirements.

5.3.3 Flexible materials such as cables, chains, and ropes shall not be used in the guardrail system, unless used as a mid-rail at access openings 30 inches (0.76m) wide, or less.

5.3.4 The platform must include toe-boards on all sides. The minimum toe-board height is four (4) inches. Toe-boards may be omitted at the access opening(s).

5.3.5 When wood railings are used, the post shall be of at least 2 inches by 4 inches stock spaced not to exceed 8 feet, the top rail shall be of at least 2 inches by 4 inches stock, and the intermediate rail shall be of at least 1 inch by 6 inches stock. If pipe is used, it shall be at least 1½ inch nominal diameter. If structural steel is used, it shall be of 2 inches by 2 inches by 3/8 inch angles or equivalent. If wire rope is used for railings, it shall have a diameter of at least 1 inch and shall be stretched taut to allow no more than a 3-inch deflection.

5.3.6 Manila or synthetic rope shall not be used as guardrails.

5.3.7 Employees shall not stand or sit on guardrails.

5.4 **Safety Nets**

5.4.1 Safety nets shall be chosen when large open web steel structures, external building protection, or large span structures require continuous protection for extended periods of time. Safety nets, when installed, tested, and maintained properly can provide total protection. As stated previously, selecting nets must be a coordinated effort between the user and the EHS Department with all hazards understood and the limitations weighed against other fall protection choices.

5.5 **Warning Lines**

5.5.1 A warning line system is restricted to low slope or flat roof work only. A warning line can be used alone or in conjunction with a personal fall arrest system, rails, or nets.

5.5.2 Warning lines, to protect employees from working within 6 feet (1.8m) of a roof edge or while working within the 6-ft area between the warning line and the roof edge, create a zone for higher awareness of the fall hazard of the roof edge. The construction of the line must be so that foundations keep the line between 34 and 39 inches high (86 to 10 cm), resist a 16-lb force (7.3 kg), be flagged at least every 6 feet, and be of a material with a breaking strength of at least 500 lb. (227 kg). These requirements are put into the standards to assure that a warning line, if chosen, will hold up to the daily wear and tear of construction projects.

5.6 **Positioning Device Systems**

5.6.1 The positioning fall protection system is designed to hold or support the user at an elevated surface, typically in an activity where both hands need to be free to perform work. The positioning system is an active system, which is engaged each time the user leans back or rests on the support system.

- 5.6.2 The system should be set up to allow for a maximum of two (2) feet of free fall and be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds (13.3 kN), whichever is greater.
- 5.6.3 The system shall be drop forged, pressed, or formed steel, or made of equivalent materials and have a corrosion-resistant finish, with all surfaces and edges smooth to prevent damage to interfacing parts of this system.
- 5.6.4 The system shall have connecting assemblies that have a minimum tensile strength of 5,000 pounds (22.2 kN) and shall have D-rings and snap hooks that shall be tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.
- 5.6.5 Snap hooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snap hook by depression of the snap hook keeper by the connected member or shall be a locking type of snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member. Only locking type snap hooks shall be used.
- 5.6.6 Unless the snap hook is a locking type and designed for the following connections, snap hooks shall not be engaged:
- Directly to webbing, rope, or wire rope; or
 - To each other; or
 - To a D-ring to which another snap hook or other connector is attached; or
 - To a horizontal lifeline; or
 - To any object which is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself.
- 5.6.7 The system shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.
- 5.6.8 Body belts (positioning device only), harnesses, and components shall be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.

6 ELEVATED WORK PLATFORMS

- 6.1 Elevated work platforms present a fall hazard if the platform has unguarded edges, floor or wall openings, or openings for ladders.
- 6.2 The best control on elevated work platforms is to eliminate the fall hazard. In most cases, the installation of guardrails is the most feasible and practical control. When guardrails cannot be installed or during the process of being installed on a work platform, fall protection or other protective means must be used to control the fall hazard.
- 6.3 Those that use or plan to use elevated work platforms must follow permitting guidelines in **EHS-00040 - Elevated Work Permit Procedure**.
- 6.4 **Mobile Elevated Work Platforms (MEWPs)**
- 6.4.1 **Mobile** elevated working platforms (MEWPs) pose similar hazards to fixed platforms with the added characteristic of being mobile. They are power-operated with primary functions (including drive controls) located on the platform. These platforms use guardrail systems, including top-rail, mid-rail, and toe-boards as the primary engineering control for the protection of workers from falls.
- 6.4.2 Only trained and qualified persons shall operate a **MEWP**.
- 6.4.3 All manufacturer's recommendations for use must be followed during operation.
- 6.4.4 Qualified operators shall be designated by their supervisor.
- 6.4.5 The scissor lift shall have a guardrail system in place that is not to be removed or tampered with during operation. Never use with guardrails removed.
- 6.4.6 Where such guardrail systems exist, the use of personal fall protection systems is not a regulatory requirement for employees while operating or utilizing self-propelled elevating work platforms and scissor lifts.
- 6.4.7 ANC implemented a requirement for employees to wear personal fall protection systems utilizing full body harnesses, anchor devices, and lanyards while working on unguarded platforms. Those working inside an elevated platform shall utilize the anchor points located inside the platform to tie-off. If anchor points are not present, employees shall ensure that each component of the guardrail system are present and in place.
- 6.4.8 Operators shall never stand on another object or the guard rails while on the platform or lift for extra height.

- 6.4.9 The work location of the **MEWP** shall be free from obstructions such as electrical lines, overhangs, other utilities, or any other obstruction.
- 6.4.10 The **MEWP** shall be moved safely from each work location with the mast fully lowered.
- 6.4.11 The **MEWP** shall not be loaded above its rated load capacity.
- 6.4.12 The **MEWP** shall only be set up on a firm and level surface away from any hazards that may cause the lift to become unstable (e.g., holes, slopes, bumps, debris, etc.).
- 6.4.13 An area five (5) feet around the perimeter of the platform or lift shall be secured using barriers or personnel to prevent individuals from coming close to the lift during operation.
- 6.4.14 Brakes must be set, and the **MEWP** must be stable before operation.
- 6.4.15 If used outdoors, the **MEWP** shall not be used in unsafe weather conditions such as high winds, rain, snow, sleet, or any other unsafe condition.
- 6.4.16 Test, inspect, and maintain scissor lifts according to the manufacturer's recommendations.

6.5 **Vehicle-Mounted Elevating and Rotating Aerial Devices**

- 6.5.1 A vehicle-mounted elevating and rotating aerial device is any vehicle-mounted device, telescoping or articulating, or both, which is used to position personnel.
- 6.5.2 The following is a list of the types of vehicle-mounted aerial devices:
- Extensible boom aerial device,
 - Aerial ladder,
 - Articulating boom aerial device,
 - Vertical tower, and/or
 - A combination of any of the above.
- 6.5.3 Aerial equipment may be made of metal, wood, fiberglass-reinforced plastic, or other material; may be powered or manually operated; and are deemed to be **an MEWP** whether they are capable of rotating about a vertical axis.

- 6.5.4 Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.
- 6.5.5 Only trained persons shall operate an **MEWP**. During operation of the aerial device, the operator must wear a body belt or harness and be connected to the aerial device with a lanyard at the platform position.
- 6.5.6 If a body belt is used the lanyard must be short enough to prevent the employees from climbing the sides of the platform or bouncing out of the basket. This would be considered a restraint device and would not permit a fall.
- 6.5.7 A body harness must be used with a fall arrest system. The **MEWP** must be able to withstand the vertical and lateral loads caused by an arrested fall.
- 6.5.8 Employees must always stand firmly on the floor of the basket and must not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

6.6 **Boom-Supported Elevating Work Platforms (MEWP)**

- 6.6.1 Self-propelled, boom-supported elevating work platform means a self-propelled elevating work platform which has its platform supported by an elevating means that both elevates and rotates relative to the machine base, and which is not mounted on a separate self-propelled vehicle. These platforms are used to position personnel, along with their necessary tools and materials, at work locations. Primary functions (including drive controls) are located on the platform.
- 6.6.2 Guardrail systems, inclusive of top-rail, mid-rail, and toe-boards are the primary engineering control for the protection of workers from falls while utilizing boom-supported elevating work platforms.
- 6.6.3 Employees, while operating or utilizing boom-supported self-propelled elevating work platforms, must use personal fall protection systems.
- 6.6.4 The occupants of the boom-supported elevating work platform must secure their personal fall protection systems to an anchorage point provided by the manufacturer and designed to withstand a static force of 5,000 pounds.
- 6.6.5 Employees may not utilize the top-rail or the mid-rail of the guardrail system as the anchorage point for personal fall protection. The guardrail system is not designed for or structurally adequate to be used as a personal fall protection anchorage point. The same requirements and warnings regarding the installation of anchorage points on self-propelled aerial lift platforms apply to boom-supported elevated work platforms.

6.6.6 Personnel shall maintain a firm footing on the platform floor while working on boom-supported MEWP. Climbing on the mid-rail or top-rail of the aerial platform is prohibited. The use of planks, ladders, or any other devices on the elevated platform for achieving height or reach is prohibited.

6.7 Ladders

There are two basic types of ladders: portable and fixed. Each type presents a different hazard to the employee and different means of control. Portable ladders present fall hazards typically controlled through good employee work practices and ladder use fundamentals. Portable ladders do not use fall protection as described in this document. Fixed ladders, however, are controlled like the other fall hazards using proper ladder design and use of fall protection.

6.7.1 Portable Ladders

Portable ladders rely on good employee work practices and ladder use fundamentals to minimize fall hazards.

Two types of portable ladders are:

- Extension ladders and
- Step ladders.

4-to-1 Rule: Follow the “4-to-1” use rule to determine the proper ladder angle. This general rule states that for every four (4) feet the ladder extends vertically from the ground to the support point, the ladder base should be one (1) foot out horizontally from and directly below the support point.

6.7.2 Fixed Ladders

Fixed ladders present a fall protection issue when the ladder extends to distances exceeding twenty (20) feet in elevation. When this height is exceeded, special fall protection provisions or equipment must be designed into the construction of the fixed ladder, such as cages or wells for ladders of more than 20 feet and landing platforms for each 30 feet of height. Ladder safety devices such as lifebelts, friction brakes, and sliding attachments must also be used, if available.

7 PROCEDURE

7.1 Fall Protection Plan

- 7.1.1 A site-specific Fall Protection Plan (FPP) is required when either Controlled Access Zones (CAZ) or other approved Safety Monitor System (SMS) is selected. Choosing either can only be implemented when all other fall protection systems have been deemed infeasible.
- 7.1.2 The formulated FPP must be written to justify why and explain the hazards associated with each operation. Within the FPP, the reasons for choosing either CAZ or a SMS, and why using conventional fall protection would create a greater hazard, must be explained thoroughly, and submitted to the EHS Department for approval, prior to implementation.
- 7.1.3 All CAZs must be demarcated with a line, rope, chain, or warning tape [minimum breaking strength of 200 lb. (91 kg)] where access is restricted. The different distances for each zone during each operation are as follows:
- Leading Edge: Between 6 ft and 25 ft (1.8-7.6 m) from work area
 - Pre-cast Erection: Between 6 ft and 60 ft (1.8-18 m) from erection operations
 - Overhand Brick Work: Between 10 ft and 15 ft (3-4.6 m) from working masons.
- 7.1.4 Each zone should be erected so the entire operation is enclosed, and access is restricted so only the employees, identified in the FPP and who are engaged in the operation, are exposed to the fall hazard.
- 7.2 A system where a competent person in fall hazards is chosen to monitor employees who are exposed to fall hazards and who are not protected by conventional fall protection measures or a CAZ.
- 7.2.1 The monitor shall stay within the oral communication range of workers and warn them when they come close to an edge where the fall is 6 ft (1.8 m) or greater. A chosen safety monitor cannot have any other duty which would interfere with the hazard warning duties.

8 INSPECTION, MAINTENANCE, AND CARE

- 8.1 As with all protective equipment, the equipment is only protective when it is functioning properly. The same holds true for fall protection equipment. Fall protection equipment must be visually inspected by the user prior to each use and periodically by a competent person to ensure the equipment is in good working order and ready for use.
- 8.2 Fall protection equipment must be inspected to ensure the equipment is properly functioning.
- 8.2.1 Manufacturer's recommendations must be followed for inspection, maintenance, and storage of fall protection equipment.
- 8.3 Fall protection equipment found to be defective must be removed from service immediately until properly repaired or replaced.
- 8.3.1 Equipment must only be repaired by a qualified person familiar with the fall protection equipment.
- 8.4 If a fall arrest system is used to control a fall, affected components of the system must be taken out of service and inspected to ensure they are in functional condition. Some components, such as the shock absorbing lanyard or retractable lifeline, must be returned to the manufacturer for recertification following their use in a fall situation.
- 8.5 Soiled or contaminated body wear (harnesses) can be cleaned in warm water using a mild soap and scrub cloth. The equipment must be thoroughly rinsed with fresh water following any detergent cleaning. Other fall protection equipment can be surface cleaned with water. Harsh chemicals should never be used to clean the fall protection equipment. Upon the completion of cleaning, the equipment must be allowed to dry thoroughly and placed in a clean and dry location to allow for proper storage.

9 EMPLOYEE TRAINING

- 9.1 Employee fall hazard training is critical to ensuring a complete fall protection program. The employee must first be instructed on the proper identification of fall hazards prior to first use and before they are able to protect themselves from the hazard. Fall protection training shall include the following elements:
- Types of general fall hazards,
 - Identification of site-specific fall hazards,
 - Means to eliminate or minimize fall hazards,
 - Types of fall protection used on site,
 - Limitations of fall protection,
 - Use and care of fall protection, and
 - Inspection of fall protection.
- 9.2 Fall protection training shall consist of procedural and hands on training. The procedural training should cover the fall protection fundamentals, while hands on training shall be based upon site-specific fall protection applications for the use of the equipment.
- 9.3 Since the misuse of this equipment can result in severe injury or even death, it is extremely important that employees are able to physically demonstrate their ability to effectively use the equipment. Each employee must be able to demonstrate this understanding prior to any unsupervised exposure to fall hazards and use of fall protection equipment.
- 9.4 Upon completion of the required training, a written certification record is prepared which contains the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. This written certification record will be stored in EHS and with the Supervisor.
- 9.5 Retraining shall be conducted when the supervisor and/or manager has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by this program.

- 9.6 Circumstances where retraining is required include, but are not limited to, situations where:
- Changes in the workplace render previous training obsolete; or
 - Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or
 - Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

10 RECORDKEEPING REQUIREMENTS

10.1 The following Fall Protection Plan files are maintained through the EHS Department office:

- List of Fall Protection Equipment Types
- Fall Protection Evaluations

10.2 The following Records are maintained with the supervisors or managers:

- Maintenance Records
- Documented Annual Inspections

10.3 Records that are [maintained in accordance with](#) this section must be kept for a minimum of three years unless otherwise indicated.

11 APPENDIX

11.1 **Appendix A** - Examples of Common Fall Hazards and Control Measures

APPENDIX A
EXAMPLES OF COMMON FALL HAZARDS AND CONTROL MEASURES

FALL HAZARD	CONTROL MEASURE
Elevated Work Surfaces including MEWPs	Designated Permitted area (See EHS-00040 Elevated Work Permit procedure for further details) Guardrails Personal Fall Arrest System (PFAS) Hard Hats within Work Area
Ladders	Consider Personal Fall Arrest System (PFAS) system for climbing fixed ladders and stepladders
Fixed Ladders (>20') located on roofs as well as fixed ladders located in NFN	Wells or cages Personal Fall Arrest System (PFAS) system in anchor point available
Catwalks	Guardrails Personal Fall Arrest System (PFAS) for horizontal and vertical travel
Roofs	Warning lines six feet from edge Work in warning zone requires fall protection usually guardrails or Personal Fall Arrest System (PFAS) EHS Department must authorize other fall protection measures. Exits & No Exits must be clearly labeled
Tanks in CUB	Guardrails, if not available Personal Fall Arrest System (PFAS)
Mezzanines	Guardrails
Trusses	Personal Fall Arrest System (PFAS) system
Scaffolds	Guardrails or Personal Fall Arrest System (PFAS) system
Window cleaning	Personal Fall Arrest System (PFAS) system
General Activities	Maintenance activities, such as climbing or working on towers or tanks and/or working within confined spaces may pose additional fall hazards which meet 4.1.1 requirements for fall protection.
Waffle Slab Floor Openings	Area barricaded. Consider covering the opening with steel diamond plate. Tools/equipment used must be tethered. Personal Fall Arrest System (PFAS) system for horizontal and vertical travel
Working under Waffle Slab Floor Openings	Area barricaded. Hard Hat Area