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SP 45 Fall Protection

1.0 PURPOSE:

- 1.1 The purpose of this document is to provide guidelines for ways to eliminate, prevent, and control fall hazards. It will also provide information regarding safe work practices when working on elevated work surfaces.

2.0 SCOPE:

- 2.1 This program applies to all Kuesel Group employees who must perform work tasks from an elevated surface.

3.0 RESPONSIBILITIES:

- 3.1 The **Project Manager/Site Supervisor** shall ensure uniform implementation and compliance with this program by all employees. The Site Supervisor shall ensure that all employees are familiar with any additional guidelines that are required by the Client and/or Jobsite.
- 3.2 The **Competent Person/Qualified Person** (ex. Jobsite Supervisor) shall ensure employees receive the appropriate training and develop guidelines that will eliminate or minimize the injury potential due to falls. The Jobsite Supervisor shall determine what Fall Protection strategies will be utilized at the jobsite.
- 3.3 Each **Employee** is responsible for complying with the guidelines as outlined in this document and any additional guidelines that are required by the Client and/or Jobsite.

4.0 DEFINITIONS:

- 4.1 Walking & Working Surfaces - Surfaces such as stairs, floors, scaffolding and any other surfaces designed, engineered or designated for walking and working.
- 4.2 Climbing - When used in the context of this procedure, climbing shall be defined as accessing structures by means other than walking and working surfaces. This includes ascending, descending, or scaling of structures, such as steel structures, steel poles, towers, wood poles, piping, girders, columns, beams, equipment or any other structure not specifically designed for or designated as a walking or working surface.
- 4.3 Competent Person - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate such hazards. The Competent Person shall receive the appropriate training to be deemed a qualified Competent Person.
- 4.4 Personal Fall Arrest System - An assembly used to arrest a person in a fall, consisting of a harness and various equipment that provides a secure connection to an anchorage. The connection to the anchorage may employ a variety of equipment including lanyards with a shock-absorbing device, lifelines, self-retracting lanyards, or rope grabs.

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- 4.5 Anchorage - A fixed structural member that provides a secure means of attachment for a Personal Fall Arrest System. The following are examples of anchorages: beams, girders, columns, angle iron, and steel cables capable of withstanding a 5,000 lb. load for each person.
- 4.6 Engineered Anchorage's - Anchorage's, designed by a registered Professional Engineer, may be used with a Personal Fall Arrest System that meets or exceeds American National standards Institute (ANSI) Z359.1-1992 and OSHA regulations.
- 4.7 Anchorage Connector - A component or subsystem with means specifically intended for coupling the Personal Fall Arrest System to an anchorage. The following are examples of anchorage connectors: carabineers, eyebolts, and rings.
- 4.8 Free Fall Distance - The vertical fall distance before the fall arrest system takes effect.
- 4.9 Horizontal Life Line - A line or cable secured to an anchorage used to allow horizontal movement with a Personal Fall Arrest System.
- 4.10 Vertical Life Line - A line or cable secured to an anchorage used to allow vertical movement with a Personal Fall Arrest System.
- 4.11 Positioning Device System - Means a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface (such as a wall) and work with both hands free while leaning. Body belts shall not be used for fall arrest.
- 4.12 Hazard Identification - The Competent person will evaluate each situation or work procedure where employees may be exposed to a fall of 6 feet or more for Construction and 4 feet for General Industry. The Competent person will be responsible for developing a plan to eliminate the exposures, if possible, or to select the appropriate fall protection systems and/or equipment.
- 4.13 Self-retracting Lifeline - A deceleration device that contains a line that can be slowly extracted from or retracted onto a drum during normal employee movement, which after onset of a fall, automatically locks to arrest the fall.
- 4.14 Body Harness - Straps secured about the employee in a manner that will distribute the fall arrest forces over the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.
- 4.15 Lanyard - A flexible line used to secure a body harness to a lifeline, deceleration device, or anchorage, with a maximum length that limits a fall to no greater than 6 feet.
- 4.16 Shock Absorbers - A component of a fall arrest system, which allows dissipation of energy by extending the deceleration distance.
- 4.17 Sliding Beam Clamps - An anchorage connector designed to move along a horizontal beam with an attached fall arrest system.

5.0 GENERAL INSTRUCTIONS:

- 5.1 The Fall Protection Program's intent is to approach a fall hazard in a logical sequence that will best protect the employee from the fall hazard and enable the employee to safely perform the

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task at hand. There are three fundamental principles to consider when addressing a fall hazard. The first and most desirable approach to consider is elimination. The second is prevention, and the last is controlling the falls.

- 5.1.1** Elimination - This is the first and best line of defense against falls from heights. Elimination requires careful assessment of the workplace and the work itself. Pre-planning of the work and site often not only leads to eliminating the hazard altogether, but also identifies alternative approaches to the work that can measurably enhance productivity. The idea is to design safety into the work process and not simply to try to add safety as an afterthought.
- 5.1.2** Prevention - Prevention of falls is the second line of defense when fall hazards cannot be eliminated. This also requires assessment of the workplace and work process. It involves making changes to the workplace to preclude the need to rely on the worker's behavior and personal protective equipment to prevent falls. Examples include use of stairs, guardrails, barriers, restraints, and travel restriction systems to prevent the worker from direct and unprotected exposure to the fall hazard. Prevention techniques deal with preventing the fall before onset.
- 5.1.3** Control - Control of falls is the last line of defense. It should be considered only after determining "within reason" that the fall hazard cannot be eliminated or the possibility of falling prevented. This is the domain of fall protection and calls for equipment such as harnesses, lanyards, shock absorbers, fall arrests, self-retracting lifelines, and anchorage connectors. It deals with reducing the risk of injury after the onset of a fall. Fall protection also necessitates assessment and planning of the workplace and work process in order to select the proper equipment, install it, and use it correctly.
- 5.2** Construction Industry Regulations require that fall protection must be in use/place whenever an employee is or would otherwise be exposed to a fall of 6 feet or more, less than 6 feet if over dangerous equipment. General Industry Regulations (29 CFR 1910 Subpart D, F and R) require that fall protection must be in use/place whenever an employee is or would otherwise be exposed to a fall of 4 feet or more, less than 4 feet if over dangerous equipment. A competent person shall assess the workplace for fall hazards and develop fall prevention/protection strategies to eliminate or reduce employee exposure to falls.
- 5.3** Walking/Working Surfaces - The Company shall determine if the walking/working surfaces on which employees are to work have the strength and structural integrity to support employees safely.
- 5.3.1** Unprotected Sides and Edges - Each employee on a walking/working surface (horizontal or vertical) with an unprotected side or edge which is six or more feet above a lower level shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. Work performed beyond the protection of a guardrail system requires the use of a personal fall arrest system.

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- 5.3.2** Holes - A hole is any opening in/or through the walking/working surface which is 2 inches or greater in its least dimension. Glazed skylights are considered to fall under this definition.
- 5.3.2.1** Employees exposed to holes in the walking/working surface shall be protected by guardrail systems, safety net systems, personal fall arrest systems, or hole covers.
- 5.3.3** Ramps, Runways and Other Walkways - Each employee on ramps, runways, or other walkways shall be protected from falling by guardrail systems.
- 5.3.4** Dangerous Equipment -
- 5.3.4.1** Each employee less than 6 feet above dangerous equipment shall be protected from falling onto or into the dangerous equipment by guardrail systems or equipment guards.
- 5.3.4.2** Each employee 6 feet or more above dangerous equipment shall be protected from fall hazards by guardrail systems, safety net systems, or personal fall arrest systems.
- 5.4** To the extent possible, personnel shall be connected to a suitable anchorage point during the entire work activity, so that fall arrest is continuously provided (100% tie-off).
- 5.5** A personal fall arrest system shall be utilized and attached to an appropriate anchorage for any of the following conditions.
- 5.5.1** When climbing or working on a surface where there is a potential fall hazard of greater than four (4) feet for General Industry or six (6) feet for Construction related activities.
- 5.5.2** When working within six (6) feet of an exposed edge, floor or wall opening, and there are no means to prevent a fall over the edge, such as a restraining device or a handrail.
- 5.6** Only ANSI approved full body harnesses shall be used in the Personal Fall Arrest System. Body belts shall not be used at any time. All fall protection equipment shall be inspected daily before use. See Section 7.0.
- 5.7** Personal fall arrest equipment, such as harnesses, lanyards and retractable web lifelines shall be taken out of service any time they are subjected to a fall. Report all falls to the Project Manager/Site Supervisor.
- 5.8** Fall protection must be immediately available (worn or “at the elevation”) when working on scaffolding or elevated equipment without Fall Prevention Barriers. It is not intended that people be tied-off while working within the confines of the handrails of a properly erected scaffold, unless this is required by the Client and/or Jobsite rules.

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5.9 A personal fall arrest system is not required when traversing from a properly positioned ladder onto a flat surface such as a roof, unless the ladder is permanently equipped with a fall protection device, such as a ladder climb.

5.10 Aerial Boom Lifts - A harness shall be worn and a lanyard attached to the appropriate tie-off point in the basket when working from an aerial lift. Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

6.0 PERSONAL FALL PROTECTION SYSTEMS:

6.1 When there is a potential fall of 6 feet or more, one or more of the following means of providing protection must be utilized:

6.1.1 Guardrail Systems - Guardrail systems must meet the following criteria.

6.1.1.1 The top edge height of top rails, or (equivalent) guardrails, must be 42 inches plus or minus 3 inches, above the walking/working level for General Industry and 42 inches flush for Construction.

6.1.1.2 Mid rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members must be installed between the top edge of the guardrail system and the walking/working surface when there are no walls at least 21 inches high.

6.1.1.3 A standard toe board shall be 4 inches in vertical height from its top edge to the level of the floor, platform, runway, or ramp.

6.1.1.4 The guardrail system must be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top edge in any outward or downward direction.

6.1.2 Safety Net Systems -

6.1.2.1 Safety net systems are a passive form of fall protection, in that safety nets do nothing to prevent falls. Rather, the system becomes active only once a fall has occurred, and functions by reducing the fall distance and arresting forces associated with the fall.

6.1.2.2 Safety nets shall be installed and inspected only under the supervision of a competent person.

6.1.2.3 Prior to installation, the nets and attachment hardware shall be inspected for defects by a competent person or approved by an engineer or approved manufacturing system. Defective nets and hardware shall not be used.

6.1.2.4 After installation and prior to employee exposure, the nets shall be drop-tested using a 400-pound sand bag which is dropped from the highest possible height an employee may fall, but not less than 42" above the net. If it is determined to be unreasonable to drop-test the nets, a competent person may certify the installation in accordance with OSHA standard 29 CFR 1926.502(c)(4)(ii).

- 6.1.2.5** Safety nets shall be inspected at least once each week and following any incident which could affect the integrity of the safety net system. All inspections shall be conducted by a competent person and documented.
- 6.1.2.6** Safety nets shall be installed as close as possible under the fall exposure, but in no case more than 30 feet below such level.
- 6.1.2.7** Nets shall be installed under the supervision of a competent person ensuring sufficient clearance under them to prevent contact with the lower surface, structures, or equipment when subjected to the impact forces equal to the drop-test forces.
- 6.1.2.8** Safety nets shall extend outward past the edge of the fall exposure. The minimum distances are outlined in the following table:

Vertical distance from the working level to the horizontal plane of the net	Minimum required horizontal distance of the outer edge of the net from the edge of the working surface
Up to 5 feet	8 feet
More than 5 feet up to ten feet	10 feet
More than 10 feet	13 feet

- 6.1.3** Personal Fall Arrest Systems - These consist of a lanyard, anchorage, connectors, body harness and may include a deceleration device, self-retracting lifeline, or suitable combinations. All personal fall arrest equipment shall meet the requirements of applicable ANSI and/or ASTM standards. If a personal fall arrest system is used for fall protection, it must do the following:
 - 6.1.3.1** Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness.
 - 6.1.3.2** Be rigged so that an employee cannot free fall more than 6 feet or contact any lower level.
 - 6.1.3.3** The use of body belts for fall arrest is prohibited and a full body harness is required.
- 6.1.4** Lanyards -
 - 6.1.4.1** Lanyards used for “fall arrest” shall be:
 - 6.1.4.1.1** Attached to the back “D” ring on the safety harness.
 - 6.1.4.1.2** Equipped with an approved shock absorber.
 - 6.1.4.1.3** Adjusted to limit the free fall distance to six (6) feet or less.

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6.1.4.1.4 Attached to an approved engineered anchorage.

6.1.4.1.5 Attached preferably to an anchorage above the waist or above you.

6.1.4.1.6 Selected in the length, which will allow the shortest free fall distance that will allow for unencumbered work.

6.1.4.1.7 Attached directly overhead where possible.

6.1.4.2 Do not tie knots in lanyards used for fall arrest; this could reduce the lanyard's strength as much as fifty percent.

6.1.4.3 If approved engineered anchorages are not available, then lanyards used for fall arrest shall be attached to a structural support within the immediate vicinity capable of supporting a load of 5,000 lbs, for each individual attached.

6.1.5 Anchorage -

6.1.5.1 Anchorage Points used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached.

6.1.5.2 Engineered fall protection anchorage's shall be clearly identified and designed to meet or exceed the requirements of ANSI standards and OSHA regulations.

6.1.5.3 Engineered anchorage's specifically designed for fall arrest shall not be used to lift materials or equipment.

6.1.5.4 Material rigging equipment, such as slings and cables are not approved anchorage connectors. The following anchorage connectors may be used:

6.1.5.4.1 Approved beam strap or pass thru tie-off adapter

6.1.5.4.2 Approved eyebolt

6.1.5.4.3 D-ring anchorage plate

6.1.5.4.4 Fixed beam anchor

6.1.5.4.5 Sliding beam anchor

6.1.5.5 The following criteria should be addressed when evaluating a non-engineered anchorage:

6.1.5.5.1 The structure supporting the anchorage, such as hangers, angle iron, connecting bolts, etc.

6.1.5.5.2 The type of material that the anchorage is constructed of.

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6.1.5.6 The following list is an example of structures/equipment, which are unacceptable as anchorages for "fall arrest."

6.1.5.6.1 Electrical conduit, cable trays

6.1.5.6.2 Instrument lines

6.1.5.6.3 PVC piping

6.1.5.6.4 Equipment that could move, such as a mobile crane.

6.1.5.6.5 Piping or ducts

6.1.6 Self-Retracting Lifeline -

6.1.6.1 Self-Retracting Lifelines shall be:

6.1.6.1.1 Attached to the back "D" ring of a body harness

6.1.6.1.2 Attached by a anchorage connector to an appropriate anchorage point

6.1.6.1.3 Used by personnel who have a combined weight (clothes, tools, individual) of at least 75 pounds and a maximum of 310 pounds.

6.1.6.2 Self-Retracting Lifelines shall **not** be lengthened by attaching lanyards or other components.

6.1.6.3 The Self-Retracting Lifeline shall not be allowed to pass underneath arms or between legs. This action could lead to serious injury.

6.1.6.4 Avoid exposure of SRL to:

6.1.6.4.1 Corrosive materials

6.1.6.4.2 Acids

6.1.6.4.3 Caustics

6.1.6.4.4 Excessive heat

6.2 Covers - Covers located in roadways and vehicular aisles must be able to support at least twice the maximum axle load of the largest vehicle to which the cover might be subjected.

6.2.1 All other covers must be able to support at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

6.2.2 To prevent accidental displacement resulting from wind, equipment, or workers activities, all covers must be secured.

6.2.3 All covers shall be color-coded or bear the markings "HOLE" or "COVER."

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- 6.3** Protection From Falling Objects - Toe boards, when used as falling object protection, shall be erected along the edge of the overhead walking / working surface for a distance sufficient to protect employees below. Toe boards shall be a minimum of 4 inches in vertical height from their top edge to the level of the walking/working surface.
- 6.4** Safety Monitoring Systems - The Kuesel Group shall utilize Safety Monitoring Systems and their use shall comply with the following provisions:
- 6.4.1** The Kuesel Group shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:
- 6.4.1.1** The safety monitor shall be competent to recognize fall hazards;
- 6.4.1.2** The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner;
- 6.4.1.3** The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored;
- 6.4.1.4** The safety monitor shall be close enough to communicate orally with the employee; and
- 6.4.1.5** The safety monitor shall not have other assignments or responsibilities which could take the monitor's attention from the monitoring function.
- 6.4.2** Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-slope roofs.
- 6.4.3** No employee, other than an employee engaged in roofing work [on low-sloped roofs] or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.
- 6.4.4** When conventional fall protection is not used these locations must be identified and classified as controlled access zones. Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.
- 6.4.5** In the event, an employee falls, or some other related, serious incident or accident occurs, (e.g., a near miss) the Jobsite Supervisor shall investigate the circumstances of the fall or other incident to determine if the fall protection program needs to be changed (e.g. new practices, procedures, or training). Corrective measures shall be implemented to prevent similar types of falls or incidents.
- 6.5** The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
- 6.6** RESCUE PLAN

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6.6.1 A rescue plan must be communicated when fall arrest systems are in use and when personnel may not be able to self-rescue if a fall should occur. The following should be considered prior to communicating the rescue plan:

6.6.1.1 The direct contact number for the local emergency responders, fire department or another professional rescue service, that would be contacted immediately if a fall were to occur.

6.6.1.2 Is there equipment immediately available to facilitate a rescue within 15 minutes of a fall?

6.6.1.3 If equipment is available, what equipment will be used for the rescue that can ensure the safety of the rescuers and the suspended worker? Regardless of whether equipment will be used to perform the rescue, emergency responders should still be contacted immediately if a fall were to occur in conjunction with the site rescue plan.

6.6.1.4 What communication systems will be used between the suspended worker and the rescue team?

6.6.2 The rescue plan should be communicated to the project personnel and addressed periodically in site safety meetings.

7.0 MAINTENANCE AND INSPECTIONS:

7.1 Personal Fall Arrest Systems shall be inspected prior to each use for mildew, wear, damage or any other form of deterioration. Defective components shall be removed from service and tagged "**DO NOT USE.**"

7.2 Inspect all equipment before each day's use:

7.2.1 Grasp the harness or lanyard in your hands and bend the equipment toward you. The tension makes the damaged fibers and cuts easier to see. Follow this procedure for the entire length of the harness or lanyard.

7.2.2 Check the D-rings for metal wear, cracks, or breaks.

7.2.3 Check the buckle, locking snaps, and thimbles.

7.2.4 Check the shock absorber for burn holes and damage.

7.3 Any fall protection equipment that has been subjected to a fall shall be immediately removed from service and not used again for employee fall protection.

7.4 Care must be taken to store all fall protection equipment in a dry area since it will deteriorate when wet. When equipment is wet and/or freezes, the strength of the material may be weakened.

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7.5 Any equipment that has been damaged by welding, cutting, weather, chemical exposure, age, etc., must be destroyed.

8.0 TRAINING:

8.1 Training shall be provided, by a competent person, for employees who might be exposed to fall hazards.

8.2 Training shall include:

8.2.1 The nature of fall hazards in the workplace.

8.2.2 The procedures for using, maintaining, and inspecting the fall protection systems to be used.

8.2.3 The procedures for handling and storing fall protection equipment.

8.2.4 OSHA Standards pertaining to fall protection.

8.3 Retraining shall be conducted when the following conditions are noticed:

8.3.1 Changes in the workplace render previous training obsolete.

8.3.2 Changes in the type of fall protection systems used renders previous training obsolete.

8.3.3 Inadequacies or deficiency in employee's knowledge or use of fall protections systems indicate that the employee has not retained the required understanding or skill.

8.3.4 Deficiencies in training are observed.

8.4 Training attendance records shall contain the name or other identity of the employee, the date of the training, the signature of the person who conducted the training and the date that the training was determined to be adequate.

8.5 Training records shall be maintained for the duration of employment.

9.0 REVISION REGISTER:

Date	Description of Change	Page No.	Initials
6/5/25	Added Section 6.6 – Rescue Plan	376	KTK