Purpose

The purpose of this program is to provide fall protection procedures to prevent injury to employees while performing work assignments at elevated levels.

Any changes to this Fall Protection Program must be approved by Senior Management, and the Qualified Person. This is based on training received in fall protection planning and has demonstrated skills and knowledge in the preparation of fall programs, plans and the hazards involved.

Scope

Applies to all SESAC employees who have work assignments at work levels that exceed 6 feet in height or within 6 feet of an unprotected edge 6 feet or greater from a lower level. This includes work near and around excavations. Guardrails, safety nets, or personal fall arrest systems shall be used where feasible.

Definitions

Anchorage means a secure point of attachment for lifelines, lanyards or deceleration devices.

Body harness means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

Buckle means any device for holding the body harness closed around the employee's body.

Carabineer - see Snaphook

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

Deceleration device means any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Deceleration distance means the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Free fall means the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free fall distance means the vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Guardrail system means a barrier erected to prevent employees from falling to lower levels.

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

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

Lifeline means 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.

Lower levels means those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

Personal fall arrest system means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Positioning device system means a 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.

Rope grab means a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

Self-retracting lifeline/lanyard means a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snaphook means a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snaphooks are generally one of two types: (1) The locking type with a self-closing, self-locking keeper which remains closed and

locked until unlocked and pressed open for connection or disconnection; or (2) The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. As of January 1, 1998, the use of a non-locking snaphook as part of personal fall arrest systems and positioning device systems is prohibited.

Unprotected sides and edges means any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches (1.0 m) high.

Walking/working surface means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Procedures

Fall protection can be managed through several controls or combinations of controls including engineering, administrative, and personal protective equipment. This Company will employ the use of any combination of controls that best suit the conditions of a particular jobsite.

Engineering Controls

Engineering controls should be implemented wherever feasible to eliminate fall hazards. Examples of engineering controls are guardrails, covers, nets, etc. (note: these controls are commonly referred to as “passive protection” because they do not require an employee’s action in order to make them work). Engineering controls can also be included in the design of a building such as higher parapet walls that would function as guardrails, etc. Engineering controls are superior to personal protective equipment (PPE) controls because PPE itself does not eliminate the fall hazard. Because engineering controls are installed by humans, there is still a chance for mistakes and defects in workmanship and materials. Continued inspection of engineered systems is essential.

Administrative Controls

Administrative controls attack problems at the employee level by manipulating schedules, training workers about recognizing hazards and establishing policies to prevent accidents. As an example, through proper production planning and coordination of subcontractor activities and schedules on the jobsite, the lesser number of workers will be exposed to falls, and falling objects at any one time. Another example would be adding integrated permanent anchor points as a part of the construction schedule. Where practical and possible, preconstruction meetings should be held with critical path subcontractors to coordinate schedules and activities.

Certain subcontractors should be required to submit pre-job hazard analysis for review by jobsite superintendents and safety personnel.

Training of workers is another administrative control. Workers must be trained to recognize fall hazards, including falling objects. Training must include discussion on proper ways to address fall protection exposures including proper use and care of personal protective equipment.

Training should be delivered through regular jobsite safety meetings, and other formalized training classes where necessary. All subcontractors should be prepared to present documentation that their workers have been properly trained in their respective fields with respect to their particular fall hazards.

Safety policies themselves are effective administrative controls. Through policy, we can establish work rules, train our workers to comply with those rules, and mandate inspection programs that will verify that policies are being followed.

Personal Protective Equipment

The last control method, PPE, protects the worker from injury in the event of a fall. PPE includes personal fall arrest systems, restraint devices, etc. It is the most widely used fall protection method in construction.

Fall protection is required any time an employee is exposed to falls of six feet or more. Generally, full body harnesses must be worn, and employees must be tied off to a suitable anchorage point utilizing a shock absorbing lanyard, retractable lifeline, vertical lifeline, etc.

Some OSHA standards, such as scaffolding, stairs and ladders and steel erection, have fall protection requirements that differ from the 6-foot rule. Also, some special fall protection practices are allowed by OSHA for specific trades involved with certain work practices. Every Contractor needs to analyze the different standards and special work practices to determine what is acceptable for each jobsite and set policy accordingly. If this has not been approved by Senior Management, this company has a strictly enforced six foot fall protection policy for all trades and activities.

The following language is recommended to help the Company comply with OSHA fall protection standards. The Company may see fit to change this language from job to job. However, at no time can a policy be adopted that is less stringent than OSHA standards.

Training must be conducted in accordance with Subpart M of the OSHA construction standards to all employees who may be exposed to falls of 6 ft or more. This training must include, but is not limited to, the hazards associated with the work environment and type of work being performed, proper use and care of fall protection devices, such as harnesses, lanyards, lifelines, anchorages, etc.

In general, this company does not accept fall protection written plans, controlled access zones, and monitoring systems as an alternative to conventional fall protection equipment. This includes wood frame construction, precast erection, roofing, bricklaying, etc.

Steel erectors must comply with a 100% fall protection rule at all heights of six feet or more with no exceptions for connectors, leading edge deck layers, etc., during all steel erection operations.

Fall protection on jobsites must be provided to prevent falls in the following areas:

- Unprotected Sides and Edges

- Leading Edges
- Hoist Areas
- Holes
- Formwork and Reinforcing Steel
- Ramps, Runways, and Other Walkways
- Excavations that are not readily seen or have ramps crossing them at 6 feet or greater
- Dangerous Equipment
- Overhand Bricklaying and Related Work
- Roofing Work on Low-slope Roofs
- Steep Roofs
- Precast Concrete Erection
- Residential Construction
- Wall Openings
- Walking/Working Surfaces Not Otherwise Addressed
- Protection from Falling Objects

Fall protection may be achieved through the use of one or more of the following systems:

- Guardrail Systems
- Safety Net Systems
- Personal Fall Arrest Systems
- Horizontal and Vertical Lifelines
- Positioning Device Systems
- Warning Line Systems
- Catch Platforms
- Aerial Lifts
- Covers
- Protection from Falling Objects Including Warning Lines, Barricades, Toeboards, Etc.

These fall protection systems must be installed and maintained in accordance with OSHA's Subpart M Fall Protection standard 1926.502.

Guardrail Systems

The top edge height of top rails, or equivalent guardrail system members, shall be 42 inches plus or minus 3 inches above the walking/working surface. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria.

Midrail, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches high.

Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working surface.

Screens and mesh, when used, shall extend from the top rail to the walking/working surface and along the entire opening between top rail supports.

Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge.

When the 200-pound test load specified in this section is applied in a downward direction, the top edge of the guardrail shall not deflect more than three inches.

Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the midrail or other member.

Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

Top rails and midrails shall be at least one-quarter inch nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high-visibility material.

When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole.

When guardrail systems are used around holes used for the passage of materials, the hole shall have not more than two sides provided with removable guardrail sections to allow the passage of materials. When the hole is not in use, it shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges.

When guardrail systems are used around holes which are used as points of access (such as ladder ways), they shall be provided with a gate, or be so offset that a person cannot walk directly into the hole.

Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge.

Synthetic rope (wire rope) being used for top rails or midrails shall be inspected as frequently as necessary to ensure that it continues to meet the strength requirements of this section.

Personal Fall Arrest Systems

It is recommended that all Personal Fall Arrest Systems meet the requirements of ANSI Z359.

Unless a lanyard or other 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; to each other; to a dee-ring to which another snap hook or other connector is attached; 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.

On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.

Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.

When vertical lifelines are used, each employee shall be attached to a separate lifeline.

Lifelines shall be protected against being cut or abraded.

Ropes and straps (webbing) used in lanyards, lifelines, and strength components of full body harnesses shall be made from synthetic fibers (no leather).

Personal fall arrest systems, when stopping a fall, shall:

1. Limit maximum arresting force on an employee to 1,800 pounds when used with a full body harness;

2. Be rigged such that an employee can neither free fall more than 6 feet*, nor contact any lower level;

3. Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet; and,

4. Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.

The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level.

Harnesses and related components shall be used only for employee protection (as part of a personal fall arrest system and not to hoist materials.

Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

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. A rescue plan should be developed and a Competent Rescuer should be on site at all times.

Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.

When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

* Note: Per OSHA interpretation, the six foot fall distance may be exceeded, provided that the force requirements are not exceeded by the falling employee and he does not contact lower levels.

Anchorages

Anchorages 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, or shall be designed, installed, and used as part of a complete personal fall arrest system which maintains a safety factor of at least two; and under the supervision of a qualified person.

Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

Personal fall arrest systems shall not be attached to guardrail systems unless the guardrail has been tested and/or engineered to meet the criteria of a horizontal lifeline system.

Warning Line Systems

The warning line shall be erected around all sides of the roof work area.

When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet from the roof edge.

When mechanical equipment is being used, the warning line shall be erected not less than 6 feet from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of mechanical equipment operation.

Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.

When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.

Warning lines shall consist of ropes, wires, chains, and supporting stanchions erected as follows:

The rope, wire, or chain shall be flagged at not more than 6-foot intervals with high-visibility materials;

The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface;

After being erected, with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or edge;

The rope, wire, or chain shall have a minimum tensile strength of 500 pounds, and after being attached to the stanchions, shall be capable of supporting, without breaking, sixteen pounds; and

The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

No employee shall be allowed in the area between a roof edge and a warning line unless the employee is performing roofing work in that area.

Mechanical equipment on roofs shall be used or stored only in areas where employees are protected by a warning line system, guardrail system, or personal fall arrest system.

Safety Monitoring Systems

Safety monitoring systems may be used only during roofing operations where conventional fall protection may not be appropriate.

The employer 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:

The safety monitor shall be competent to recognize all hazards;

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;

The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored;
The safety monitor shall be close enough to communicate orally with the employee; and

The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

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.

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.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

Covers

Coverings of roof and floor openings shall be capable of supporting twice the weight of employees, equipment and materials that may be imposed on the cover at any one time.

All covers shall be secured when installed to prevent accidental displacement by wind, equipment, or employees.

All covers shall be painted with high visibility paint or shall be marked with the word "HOLE" or "COVER" to provide warning of the hazard.

Smoke dome or skylight fixtures, which have been installed, are not considered covers.

Protection from Falling Objects

Toeboards, 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. Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard.

Toeboards shall be a minimum of 3½ inches in vertical height from their top edge to the level of the walking/working surface. They shall have not more than ¼ inch clearance above the

walking/working surface. They shall be solid or have openings not over 1 inch in greatest dimension.

Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening shall be erected from the walking/working surface or toeboard to the top of a guardrail system's top rail or midrail, for a distance sufficient to protect employees below. Guardrail systems, when used as falling object protection, shall have all openings small enough to prevent passage of potential falling objects.

During the performance of overhand bricklaying and related work:

No materials or equipment except masonry and mortar shall be stored within 4 feet of the working edge.

Excess mortar, broken or scattered masonry units, and all other materials and debris shall be kept clear from the work area by removal at regular intervals.

During the performance of roofing work:

Materials and equipment shall not be stored within 6 feet of a roof edge unless guardrails are erected at the edge.

Materials which are piled, grouped, or stacked near a roof edge shall be stable and self-supporting.

Canopies, when used as falling object protection, shall be strong enough to prevent collapse and to prevent penetration by any objects which may fall onto the canopy.

Post Fall Recovery

When a fall occurs, follow these guidelines:

1. Determine the seriousness of any injury to the fallen employee
2. Determine the most effective means of rescue
3. Call emergency services if needed
4. If possible, allow only trained personnel to participate in the rescue
5. Stabilize the injured employee if possible prior to moving him to prevent further injury
6. Lower the employee to a safe area
7. Re-evaluate injuries, if any
8. Transport to the pre-designated medical facility, if treatment or drug/alcohol test is required

9. Check fall protection systems immediately to determine damage

10. Remove the employee's full body harness and lanyard from service and return for inspection by competent persons

11. Always conduct an investigation

Rescue equipment must be available for use in close proximity of each work area at all times where employees are exposed to falls. The following equipment may be used:

- Ladders
- Mobile Scaffold
- Well Wheels equipped with choker or cross arm sling and length of rope long enough to reach the tallest part of the structure from the ground 2½ times.
- Scissor Lifts, Extendable Boom Work Platforms, JLG Lifts, etc.
- Cranes equipped with Stokes Litter Basket or Personnel Work Platform

Only trained Competent and Authorized employees can perform post fall recovery operations (see ANSI Z359 for training requirements)