Fall Protection Program (FPP)

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Email: IS@ehs.ucsb.edu
Phone: (805) 893-7534

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I. Purpose/Introduction

Falls are among the most common causes of serious work-related injuries and deaths. Consequently, fall protection standards are one of the most frequently cited workplace violations by OSHA. The purpose of this program is to ensure campus compliance with applicable regulations and to reduce fall related risks by 1) mitigating exposures to fall hazards through the use of effective controls, and 2) establishing procedures that ensure safe and legal use of fall protection equipment when fall hazards cannot be properly mitigated.

Stop Work Authority (SWA) - At UCSB all persons have the right and responsibility to stop work if an imminent hazard exists, if the job is perceived to be unsafe, if conditions change, or to ask a question and clarify the job steps so that all participants are aware of the sequence of work to be performed. Work may resume when the Supervisor, PI, Crew Leader, or EH&S, etc. have reviewed the situation, mitigations have been made or steps clarified, and all participants agree.

II. Applicability/Scope

This program applies to all UCSB faculty, staff, students, volunteers, or visitors while engaged in University related activities while on campus or off. At UCSB fall protection must be utilized whenever there is risk of a fall of four (4) feet or more or there is risk of a fall from any height that is likely to result in serious injury or death, unless it has been determined that the work falls under Cal/OSHA Construction Safety Orders (please contact the Program Administrator for assistance in making this determination). Please see the non-exhaustive list below for work activities and locations that may require fall protection:

Aerial Lifts	Fixed/Portable Ladders	Scaffolds
Roof Access (roof openings)	Stairways	Trenching/Excavation
Structural Framing	Tops of Equipment	Window Washing
Manholes or Vaults	Loading Docks	Tree Trimming
High/Low Voltage electrical work (or telecommunications) 4 ft. above surface	Water sumps, tanks, and vessels	Wall openings (>18 inches) or open sided floors
Working over dangerous machinery	Any height over uncapped rebar or an unprotected elevation more than 4' above capped rebar	More than 4 ft. to a lower level from roofs, excavation perimeters, or similar locations
Within 6 ft. of a leading edge of a fall hazard of 4 ft. or more	Skylights (or working over glass)	Working over water (or near body of water)

III. Definitions

100% Tie Off – The requirement to be properly connected to personal fall arrest and restraint systems with proper anchoring point at all times or 100% of the time (from point to point; ascension to descension).

Aerial Lifts – Equipment such as powered platforms, vehicle-mounted elevated and rotating work platforms, extension booms, aerial platforms, articulating booms, vertical towers, and powered industrial truck platforms. See Section V - Aerial Lift/Elevated Work Platforms descriptions of various AL/EWP equipment classifications.

Active Fall Protection or Arrest Systems – are elements that prevent falls or protect from serious injuries, but involve worker participation, they are movable. These are opposite of passive or fixed systems. Examples include body harnesses, lanyards, anchoring devices, lifelines, and connectors such as snap hooks.

Approved – Tested and approved by a Nationally Recognized Testing Laboratory (NRTL) such as Underwriters Laboratory (UL) or Gravitec. Alternatively, safety measures, procedures, and fall protection equipment meeting Cal/OSHA and Fed OSHA regulations as well as this program.

Authorized User (Person) – A person who has received Fall Protection training, and is current in their training. Also referred to as a "user" of fall protection. Someone who can inspect the fall protection equipment assigned to them prior to use and who can safely work at heights using the equipment properly according to this program, manufacturer's guidelines, regulatory requirements, and industry best practices. May also be an authorized repair person who has been trained and granted permission to work on fall protection equipment such as rebuilding an SRL.

Anchorage or Anchor Point – A secure point of attachment for lifelines, lanyards or deceleration devices. May also be a "Bearer Bracket" or a "Roofing Bracket". Must be designed and rated by a qualified person to withstand a minimum of twice the load or 5,000 lbs.

Bearer Bracket – A bracket used in slope roof construction, having provisions for fastening it over the roof-ridge and being secured to some suitable object; also known as "Roofing Bracket".

Body Belt – A leather or web (cotton or nylon) belt designed specifically for employees working on poles. It consists of a waist belt, generally cushioned, with a front buckle, two D rings for attaching safety straps and a multiple-looped strap for holding rings, snap hooks, holsters and other tool holding devices. ***Body belts solely are prohibited to be used by UCSB employees for fall protection. An integrated body belt within a full-body harness is acceptable.***

Body Harness (Full-Body Harness) – Straps which may be secured about a person's

torso and buttocks 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. Also called "harness" for short.

Buckle – Any device for holding the body belt or full-body harness closed around the employee's body.

Buddy System – Implementing at least two people for tasks to ensure safety and assistance in case of incident or having another individual check on conditions such as the proper fit of a harness prior to starting work.

Catenary Line – See "Lifeline".

Carabineer – See "Snap-hook".

Certified Anchor – A point that has been designed and installed to an engineer's specifications. For fall arrest a certified anchor must exceed two (2) times the maximum arresting force (not the 5,000 lb. requirement). Certified Anchors also have requirements for positioning, restraint, rescue, horizontal lifelines, and testing.

Connector – A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or an integral component of a part of the system such as a sewn in D-Ring (Dee-Ring) on a harness or a snap-hook on an SRL.

Controlled Access Zone (CAZ) – An area in which certain work may take place near a leading edge without the use of guardrail systems or personal fall arrest systems, and access to the zone is controlled. It must be clearly marked by control lines and warning signs, or other means to restrict access. Must be only implemented with written approval from EH&S and appropriate Department Heads, Supervisors or Principal Investigators (PI) with appropriate Safety Monitoring Systems and Warning Line Systems in place. Sometimes implemented in masonry and bricklaying operations.

Competent Person – Usually a Supervisor and/or Program Administrator; one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are hazardous, dangerous, or ultimately change the conditions of the worksite and who has authorization to take prompt corrective action to eliminate them or stop work until mitigations can be achieved. Departments must designate the competent person who can inspect equipment for semi-annual inspections once trained. May be trained and authorized to use fall protection equipment. Must be current in training to maintain the Competent Person designation.

D-Ring (Dee-Ring) – The "D" traditionally describes the shape of a ring that is used in personal fall arrest systems to attach positioning or arrest attachments. See

"Dorsal".

Dangerous Equipment – Equipment by their form or function that may be inherently dangerous to employees who fall onto or into such equipment. Examples include pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, rotating equipment, engines, compressors, generators, etc.

Deceleration Distance – The distance that a fall arrest system implements to stop a fall in progress. This must be equal to or less than three and a half (3.5) feet.

Deceleration Device – Any mechanism, such as a rip-stitch lanyard or SRL, which serve to dissipate a substantial amount of energy during a fall arrest or otherwise limit the energy imposed on a worker during a fall.

Dorsal – Meaning back. The dorsal D-Ring on a full-body harness is the primary location used for fall restraint/arrest attachments. The D-Ring must be positioned between the shoulder blades for proper fit. Usually the location to attach a rescue device in the event of a fall.

Fall Protection Equipment (FPE) – A type of Personal Protective Equipment (PPE) that helps prevent falls (known as fall restraint) or reduce the impact of a fall (known as fall arrest).

Fixed Ladder – A ladder, including an individual rung ladder, which is permanently attached to a structure, building, or equipment (often welded or bolted into place).

Free-Fall – The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free-Fall Distance – Must never be greater than six (6) feet. The vertical displacement of the fall arrest attachment point on the employee's full-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 – A barrier consisting of a top rail and a mid-rail secured to uprights and erected along the exposed sides and ends of platforms. A form of perimeter protection. May be required with toeboards.

Handrail – A rail used to provide employees with a handhold for support. Typically used on stairs.

Hole – Any area in a floor or platform that is open to an area below but is smaller in size than an "opening" as defined by the Cal/OSHA Fall Protection codes. A gap or void typically measuring two (2) inches or more in diameter.

Hole Cover – A device to prevent the inadvertent fall through an opening. Usually

engineered to be capable of handling weights and force and has design elements such as beveled edges to prevent trip hazards.

Ladder Safety System – An approved assembly of components installed on or alongside a fixed ladder, whose function is to arrest the fall of a user.

Lanyard – A flexible line to secure a wearer of a safety belt or harness to a drop line, lifeline, or fixed anchorage.

Leading Edge – 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. Sometimes referred to as an unguarded edge.

Lifeline – Usually a horizontal steel-wire rope (i.e. Catenary line) located between two fixed anchorages and suspended above the work surface, to which the lanyard is secured either by tying off or by means of a suitable sliding connection. A lifeline may be vertical when used with a rope-grab attached by lanyard to a body harness.

Lower Levels – 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.

Mid Rail – A rail approximately midway between the top rail and platform that is secured to the uprights erected along the exposed sides and ends of platforms.

Non-Certified Anchor – Must be able to support at least 5,000 lbs. (or 3,000 in certain cases) for every employee attached to that anchor. Usually a structure member of a building (an I-beam for instance).

Opening – An open area in any floor or platform twelve (12) inches or more in the least horizontal dimension. It includes: stairway floor openings, ladder-way floor openings, hatchways and chute floor openings.

Passive Fall Protection System – Elements that protect against falls that are fixed, static, or unmoving such as guardrails and toeboards.

Perimeter Protection – Required on all open sides of unenclosed elevated work locations. Examples include roof openings, open and glazed sides of landings, balconies, or porches, platforms, runways, ramps, or working levels more than thirty (30) inches above the floor, ground, or other working areas of a building.

Personal Fall Arrest System (PFAS) – A system used to slow and stop a person during a fall from an elevated location. It consists of an anchorage, connectors, a body

harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. The use of a body belt for fall arrest is prohibited by law.

Personal Fall Restraint System (or Restraint System) – A system used to prevent an employee from access to a leading edge or other fall-hazard location. It consists of anchorages, connectors, body belt/harness. It may include lanyards, lifelines, and rope grabs designed for that purpose. This system prevents a person from falling by design.

Personal Fall Protection System – A generic term for any designed fall protection system that might include fall arrest systems, positioning device systems, fall restraint systems, safety nets, guardrails, etc.

Personal Protective Equipment (PPE) – As this term applies to Fall Protection Equipment, it defines the safeguarding obtained by use of fall protection safety devices worn by a person and that safeguards them from a fall hazard, and is of such design, strength, and quality as to eliminate, preclude, or mitigate the hazard.

Positioning Device System – A full-body harness system rigged to allow an employee to be supported on an elevated surface, such as a wall or pole, and work with both hands free while leaning.

Qualified Person (Individual) – A person designated by their employer who by reason of training and experience has demonstrated the ability to safely perform duties and, where required, is properly licensed or certified in accordance with federal, state, local laws/regulations/industry requirements (a repair person for SRLs is an example). May be an engineer to oversee the design, selection, installation and initial inspection of FPE including safety systems, warning systems, anchorages, etc. A qualified person may also meet the definition of competent person. A person designated by the University to prepare and revise this program and investigate falls from heights (Program Administrator).

Railing – See "Guardrail"

Ramp – A surfaced sloping passageway connecting two different levels.

Reflow Syndrome – Or Rescue Death, when blood pools in the lower extremities (legs) for an extended period of time due to the result of a fall from height and the sudden rush of toxin-rich, oxygen deficient blood back to the heart and brain post rescue. Prevention is possible with the use of suspension straps and proper recovery post rescue.

Rescue Plan – A written document that outlines the procedures, equipment, and personnel needed to ensure a quick and efficient rescue of a worker should a fall occur while the worker is using a personal fall arrest system.

Roofing Bracket – See "Bearer Bracket"

Rope – Refers to steel-wire rope unless otherwise specified.

Rope Grab – A deceleration device which travels on a vertical 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.

Safety Belt or Harness – A device specifically for the purpose of securing, suspending, or retrieving a worker in or from a hazardous work area.

Safety Factor – Ratio of the ultimate breaking strength of a structural member, piece of material or equipment to the actual working stress or safe load when in use. A margin against risks used in calculating total fall distance to provide room to prevent impact.

Safety Line – A vertical line most often of polypropylene or other woven synthetic material provided to protect a person from falls caused by failure of suspended scaffolds, working platforms, or loss of balance, and that extend to within four feet of ground or another stable rescue surface.

Safety Monitoring System – Specifically for roofing, this system employs a competent person, called a safety monitor, to warn workers when they are in danger of falling. Requirements apply.

Sealed Block – A type of SRL, usually fixed in a location to be utilized as a fall arrest device or controlled descent device in fall protection or rescue systems. For instance, it could be at the top of a fixed ladder with hook accessible at grade below to be used by someone climbing the fixed ladder up. Housed in a sealed enclosure to protect critical components from dirt, grease, water, and chemicals.

Self-Retracting Lifeline (SRL) – A deceleration lanyard device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal movement by the user/wearer, and which, after onset of a fall, automatically locks the drum and arrests the fall. Must be of a Class 1 or Class 2 type and must have proper labelling as such to be used.

Safety Strap – A web strap designed specifically for use in conjunction with a lineman's belt as an aid in climbing poles and to secure the employee to the pole in a manner that permits hands-free work using both hands.

Snap-hook – A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object; also known as a "Carabiner". In fall protection systems a snap-hook must be a double locking type where two actions will allow the device to be opened.

Sharp Edge – A sharp edge is one that, for practical purposes, is not rounded and

has the potential to cut and even completely sever most types of lifelines.

Shock Absorbing – Arresting force is greatly reduced, minimizing impact of a fall.

Suspension Straps – Also known as suspension trauma straps or trauma straps. A device worn on a full-body harness to be used in the event of a fall to prevent suspension trauma and reflow syndrome.

Suspension Trauma – Also known as orthostatic shock while suspended, harness hang syndrome (HHS), suspension syndrome, or orthostatic intolerance is an effect which occurs when the human body is held upright for an extended period of time.

Stop Work Authority (SWA) – The act of stopping work for safety purposes. All persons have the right and responsibility to enact this without fear of reprisal.

Toeboards – A low barrier that protects people and equipment from falling objects by preventing them from reaching a lower level.

Total Fall Distance – A calculation of the total distance involved in a fall from heights. This equation considers the height of the anchoring point from the worker, the deceleration distance, the lanyard length, the height of the worker, and a safety factor to prevent impact to the ground, level, grade below. This calculation determines locations of proper anchoring and appropriate lanyard lengths as well as analyzing the work location if a personal fall arrest system is acceptable at the site. See Section VII. Selection/Procurement of FPE.

Unprotected Sides and Edges – 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 standard guardrail provided.

Wall Opening – A gap or void thirty (30) inches or more high, and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.

Warning Line System – A system of acceptable fall protection in some situations. Implementing the use of rope, wire, or chain that alert workers to leading edges on roofs, floors, or other work surfaces. Requirements apply.

IV. Responsibilities

A. Department Chairs & Heads

Department Chairs and Heads are responsible for:

- Ensuring departmental compliance with the requirements of this program;
- Ensuring fall hazards within department owned or controlled spaces are identified through regular safety inspections;
- Ensuring fall hazards identified are proper mitigated using the Fall Protection Hierarchy of Controls;
- Identifying "Fall Protection Equipment Responsible Person(s)" in writing and ensuring they have the knowledge and authority to carry out their responsibilities listed below;
- Providing the necessary resources to ensure the health and safety of departmental employees; and
- Exercising Stop Work Authority when necessary.

B. Responsible Persons (RP): Supervisors and PIs

Supervisors of personnel who may be exposed to fall hazards are responsible for:

- Understanding and complying with UCSB Fall Protection Program requirements;
- Ensuring work-tasks are evaluated for fall hazards and hazards are properly mitigated following the hierarchy of controls prior to commencing work;
- Identifying personnel who require fall protection training and ensuring documented training on fall protection hazards, fall protection mitigation measures, proper use of FPE, and FPE rescue planning is performed by EH&S or an approved 3rd party vendor prior to commencing work;
- Ensuring proper FPE is selected and used for each job task under their purview when required;
- Ensuring the EH&S Program Administrator reviews and approves all new FPE before it is purchased;
- Ensuring FPE is only issued to individuals with current FPE training;
- Keeping an accurate and up to date inventory of all FPE under their purview;
- Ensuring viable Rescue Plans are developed and implemented for each operation where FPE is used;
- Enforcing the safe and proper use of FPE under their purview;
- Identifying unsafe use of FPE by personnel under their preview and ensuring it is properly documented and mitigated;
- Ensuring FPE under their purview is inspected per UCSB Fall Protection Program requirements;
- Ensuring FPE that has not passed its most recent inspection or is passed due for inspection is red-tagged and taken out of service (equipment may go back into

service if repaired by qualified/authorized individual or an inspection has been performed by a competent individual, restrictions apply);
- Ensuring damaged or otherwise unusable FPE is red-tagged, destroyed and/or properly disposed of;
- Notifying the EH&S Program Administrator of the improper use of any Fall Protection Equipment; and
- Exercising Stop Work Authority when necessary.

C. Fall Protection Equipment (FPE) Users

Faculty, Staff, Students, Visitors, and Volunteers who use fall protection equipment are responsible for:

- Using fall protection equipment properly/safely as per manufacturer's specifications, regulations, this program, and industry best practices.
- Reviewing and following Rescue Plans when they apply to their work activities;
- Always select, inspect prior to use, use, clean and store FPE in a safe manner (per manufacturer's specifications and industry best practices);
- Alerting the Responsible Person, Supervisor, or EH&S Program Administrator when FPE has any damage or weakness requiring repair/replacement; and
- Exercising Stop Work Authority when necessary.

D. Environmental, Health, and Safety (EH&S)

The UCSB Fall Protection Program is administered by the Department of Environmental Health and Safety (EH&S). EH&S is responsible for:

- Designating an individual who is qualified by appropriate training and/or experience to administer the program.

E. EH&S Program Administrator

The UCSB Fall Protection Program Administrator will function as a technical resource and assist departments in carrying out their responsibilities as necessary. The UCSB Fall Protection Program Administrator is responsible for:

- Reviewing new equipment purchases/rentals/leases and ensuring it meets the current regulations, is covered by this program, and determining if further specialized training is necessary;
- Working Procurement Services, FPE manufacturers, and the Owner Departments to help determine proper FPE selection, use, stocking, and safe-work practices unique to the Owner Department's work activities;
- Providing, supplementing, and consulting on training to assist Owner Departments in FPE Program compliance;

- Maintaining and updating this Program as need dictates, or as compliance codes change;
- Developing and maintaining the Fall Protection Program and ensuring it meets applicable regulatory requirements;
- Communicating requirements, objectives, and plan changes to departments impacted by this program;
- Developing and updating Fall Protection training and other program materials as needed;
- Auditing program records and ensuring they are retained for the correct amount of time;
- Working with responsible persons to identify safe locations were "hands on" field training may be conducted;
- Conducting regular program audits to ensure the program is being properly implemented and assessing overall program effectiveness;
- Conducting periodic "customer service" inquiries to learn how the program can be modified to better meet client department's needs;
- Assisting with Fall Protection implementation Site/Operation Hazard Evaluations upon request; and
- Exercising Stop Work Authority when necessary.

V. Requirements

At UCSB fall protection must be utilized whenever there is risk of a fall of 4 feet or more or there is risk of a fall from any height that is likely to result in serious injury or death, unless it has been determined that the work falls under Cal/OSHA Construction Standards (please contact the Program Administrator for assistance in making this determination).

Additional work specific requirements are summarized below:

A. Elevated Work Locations

Guardrails are required on all open sides of unenclosed elevated work locations such as roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working levels more than 30 inches above the floor, ground, or other working areas of a building. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails must be installed. The railing must be provided with a toeboard where the platform, runway, or ramp is 6 feet or more above places where employees normally work or pass under and the lack of a toeboard could create a hazard from falling tools, material, or equipment. Parapets of at least twenty-four (24) inches high may be an acceptable alternative to guardrails, but must be designed into building construction.

Exceptions exist including elevated locations used infrequently by employees if the employees using them are protected by a fall restraint/fall arrest system.

See **8 CCR 3209**and **8 CCR 3210** for more information or see EH&S Program Administrator for guidance.

In Summary:

- Surfaces of thirty (30) inches or more above a lower level require a guardrail.
- Guardrails must withstand twenty (20) pounds of force per linear foot.
- Guardrail height must be 42-45 inches tall.
- Post spacing must be less than or equal to eight (8) feet.
- Guardrails constructed from wood must use two by four (2x4) nominal material.
- Guardrails constructed from steel pipe must use pipe one and a half (1.5) inches in diameter or more.
- Guardrails constructed from metal angle (angle iron) must use two (2) inch by two (2) inch with a thickness of three-eighths (3/8) inch.

B. Guarding Floor Openings, Wall Openings, Skylights, and Holes

Engineering controls such as hole covers, guardrails, fencing, screens, etc. that have been manufactured and tested to prevent falls and can withstand prescribed forces/weights (within regulations) are required to be installed to provide protection for personnel from the hazards of falls over open hatches (including roof hatches), pits, tanks, vats, ditches, excavations, glass, etc. See EH&S Program Administrator for guidance.

C. Scaffolding Safety Requirements

All scaffolding must be designed and erected to regulatory requirements by a licensed and qualified scaffolding contractor or individuals. Licenses or certifications can be from a trade association or other State approved training plan.

An inspection tag must be on each scaffolding system erected. A competent person must inspect and "sign-off" on the inspection tag on all scaffolding prior to use, after any modification to the scaffolding, or after any change in conditions that could potentially have altered the structural integrity. Unsafe scaffolding that does not pass inspection must be tagged "Unsafe for use". Scaffolding inspectors must not use scaffolding components to anchor personnel fall arrest systems. All inspection records including documentation pertaining to modifications must be retained for the life of the project and for a minimum of five (5) years after the project.

Scaffolding must only be used as a temporary work platform, and not a permanent work location. Scaffolds must be installed with toe boards, screens, guardrails, debris nets, catch platforms, and/or canopy structures to contain and/or deflect falling objects when people are working under the scaffolding and/or within the path of potential dropped objects from the structure. Limiting access to the area surrounding scaffolding may be implemented in place of debris nets, catch platforms, etc. Warning signs and barricades are required when erecting, modifying, or dismantling scaffolding, around incomplete scaffolding, when scaffolding is exposed to pedestrian or heavy equipment traffic, for areas below where there is a potential for dropped objects.

Scaffolding must not block access/egress to entry/exit routes in particular designated emergency egress routes.

Personal fall arrest systems (PFAS) must be worn when working on/within scaffolding over ten (10) feet high. Guardrails must meet the specified requirements and toeboards must be installed when people work or pass below or at all interior floor, roof, and shaft openings. See **Scaffolding Safety Program**.

D. Aerial Lifts and Elevated Working Platforms

Only those who have been trained and qualified to operate aerial lifts and elevated working platforms are authorized to use this equipment. Fall protection is required and recommended. See **Aerial Lifts, Elevated Work Platforms, and Bucket Truck Safety Program**.

E. Portable Ladders

Fall protection is required while using portable ladders in the following situations:

1. When reaching beyond the envelope of the ladder is required or 3 points of contact cannot be maintained or the ladder cannot be moved to work from within the envelope of the ladder.

2. When unavoidable hazards exist in the vicinity below the ladder.

3. When using heavier or bulkier power tools (tools that cannot be easily wielded or manipulated by one hand, or that create torque or kickback that may subject the user to become off-balance) while on the ladder.

Fall protection must be used unless the Owner Department can demonstrate that the planned work activities are safe without the use of fall protection. All alternatives should be considered prior to using personal fall protection including temporary scaffolding with appropriate railings, the use of aerial lifts or elevated work platform such as a "Lift Pod", the use of Genie lifts or bucket trucks, scissor lifts, etc. See **Ladder Safety Program**.

F. Fixed Ladders

Fall Protection for fixed ladders must be fall arrest or a ladder safety system. For fall arrest, unless the rungs of the ladder are engineered to be anchor locations (meaning engineered and capable of handling load requirements) the fall protection hooks must be used on the rails; use alternative means of ascent if possible (i.e., aerial lifts or elevated work platforms) or install other anchorages/ladder safety systems. See EH&S for guidance prior to starting work.

A ladder safety system must be used when using a fixed ladder that meets any of the following criteria:

- Exceeds twenty (20) feet in length with or without a cage and do not have rest balconies every twenty (20) feet or fraction thereof.
- Exceeds thirty (30) feet and are equipped with a ladder cage but do not have rest balconies every thirty (30) feet or fraction thereof.
- Have no off-set (rest balconies) ladder sections and are twenty (20) feet in length or higher.

A ladder safety system includes:

- A carrier that is a flexible cable or rigid track to which the lanyard will be attached.
- Permanent attachment of the carrier.
- Associated attachment elements such as safety sleeve, full-body harness, and connectors.

Ladder Safety System Fall Arrest Guidelines:

1. Only use full-body harnesses that are equipped with front or hip D-ring attachments.

2. Inspect all fall protection equipment prior to each use. Immediately report any damaged equipment to your supervisor or instructor.

3. Never use defective fall protection equipment.

4. Attach or tie-off any tools or equipment, including your hard hat, to your body when you need to transport items up or down the ladder.

5. Attach the front or hip D-ring to the carrier connection prior to ascending or descending the ladder.

6. Ensure the connections are compatible and secure, and the snap hook is closed and locked.

7. Disconnect from the ladder safety device to exit the ladder only after you are stable.

8. Never detach from the ladder safety system during an ascent or descent of the ladder until you are prepared to exit the ladder.

9. Allow the carrier connection to lead you down. Climbing down out of position will cause the carrier connection mechanism to lock onto the carrier.

10. Move upward slightly to release the carrier connection should it lock.

11. Never use the ladder climbing body harness for attachment to fly, tension, and other types of fall protection systems that require body harness D-ring attachment at the back of the harness. Change body harnesses prior to attaching to another type of fall protection system.

See **Ladder Safety Program**.

G. Loading/Unloading Trucks or Trailers

Where being on top of a vehicle, trailer, or tank car is required; safe access must be provided. If applicable keep stake sides up, have a safe means to climb up and down with the use of a proper portable ladder with sufficient length (A-frame). Workers must heed caution with the edge of the structure.
Loading docks are locations with many potential hazards and are frequently used to transfer equipment, materials, and supplies in and out of buildings with minimal inconvenience to occupants. Removable guardrails or similar protective devices are required at mixed-use loading docks above thirty (30) inches high to prevent falls. However, all loading docks must implement the following safeguards to prevent falls and other injuries:

- Conduct a safety inspection prior to use.
- If operating a forklift or other lift truck device, all operators must be appropriately trained and authorized to operate the equipment. See Forklift and Powered Industrial Truck Program.
- Utilize wheel chocks on the vehicle being loaded or unloaded or install and implement a vehicle restraint system to prevent incidental movement during operations.
- Use available stairways or ramps to elevated dock surfaces. Do not climb up or down from an elevated dock.
- Use dock leveling plates where appropriate.
- When removing guardrails (or other protective devices) ensure storage is not creating a hazard such as trips and falls.
- Replace guardrails or other protective devices after loading/unloading operations.

- Ensure loading dock edges are painted/striped sufficiently with high visibility colors.
- Ensure sufficient lighting to illuminate the dock and surrounding area.
- Ensure housekeeping is conducted regularly, keep the surface of the loading dock clean and dry, and mitigate slips, trips, and fall hazards.
- Ensure PPE is worn including safety toe footwear with anti-slip/oil resistant features.
- Ensure signage is in place adequately warning of the loading dock unguarded edge and risk of falls.
- Implement administrative and engineering controls to limit personnel including vehicles, materials, and pedestrians on or around the loading dock.
- Reschedule loading/unloading and notify the building manager/supervisor if an unsafe condition exists.
- See Loading Dock Safety Reference for further information and seek guidance from EH&S.

H. Stationary Tanks

Where sampling, gauging, inspecting or performing other tasks associated with tanks from the top-down, workers are exposed to fall from heights risks. Tank roofs are typically neither safe access areas nor working platforms. Working from tank roofs is prohibited unless an approved walking and/or working surface exists (such as an engineered, constructed and manufactured catwalk) or the tank roof has been deemed safe to work on by a certified Professional Engineer (P.E.). Personal fall arrest systems must be used with 100% tie off and proper anchoring while working on top of tank roofs. Where possible alternative means must be explored for access such as using mechanized equipment (aerial lifts, manlift, elevated work platforms, etc.).

I. Working Over/Near Other Hazards

Fall protection is required when work is above water, glass (such as skylights), or dangerous machinery. Fall protection may implement passive systems such as guardrails, screens, etc. or the use of fall restraint or PFAS.

Where the risk of drowning exists, workers must use a U.S. Coast Guard approved life jacket or work vest. Fall protection or barricades are required when working within three (3) feet of leading (unguarded) edges of platforms over water (e.g., a pier) and ring buoys must be readily available or within 200 feet.

When working over or in close proximity to glass (as in a building with large windows), the implementation of engineered screens or guardrails must be analyzed or fall restraint must be utilized, but the fall protection system must be designed to prevent contact with the glass surface in case of a fall.

Dangerous Machinery must be considered a hazard in the event of a fall. Electrical equipment, workshop equipment, server cabinets, pickling or galvanizing tanks, generators, boilers, HVAC systems, etc. must all be considered dangerous and workers must be prevented from falling onto or into this equipment. Fall protection implemented must be in the form of guardrails, fall restraint, or PFAS in that order.

Other hazards include working on top of septic tanks or sewer tanks/holds, molten metal, etc.

See EH&S for guidance when planning work at heights over nearby equipment or other hazards.

J. Rescue Plans and Post Fall

Rescue plans are required and must be documented every time working at height occurs where personal fall arrest systems (PFAS) are used, but recommended to be developed for all situations where workers are exposed to falls from heights. At height work locations where protection systems have been engineered and installed such as guardrails to completely eliminate a fall hazard, are not required to have rescue plans. If a worker falls or related incident occurs, UCSB will initiate its Incident Reporting and Investigation procedures to determine if the Fall Protection Program or individual procedures of the job require revision and implement changes.

A rescue plan can be a "Self-Rescue" or "Buddy Rescue", where the fallen individual can safely rescue themselves from the fallen suspended position (fixed ladder is immediately next to and within reach or with a controlled descent device) or when utilizing the buddy system, a ladder or other suitable piece of equipment (such as an aerial lift) is brought to the fallen suspended individual. A ladder or any mechanical personnel lifting equipment and second person acting as an attendant must be present where a self-rescue is specifically called out in the rescue plan. These two acceptable means of rescue must be performed almost instantaneously of a fall to prevent suspension trauma. There must be no other hazards present for a self-rescue or buddy rescue to be performed such as dangerous equipment below the suspended worker or rough terrain preventing the use of a ladder. The attendant must call 9-1-1 immediately regardless if a self or buddy rescue can be performed easily.

In some situations, a rescue team must be on site and standing by with the ability to respond quickly and effectively to a fallen individual. Rescue equipment may need to be installed or setup in advance to ensure a quick response. Contact EH&S to discuss the job(s) where a Fall Rescue Team may need to be onsite. Fall Rescue Teams are typically 3rd party contractors with certifications, training, equipment, and experience to swiftly rescue someone from heights and administer appropriate first aid to prevent suspension trauma and reflow syndrome.

Suspension trauma can occur within as little as a few minutes of a fall. It can cause syncope (fainting), a loss of consciousness, and potential death. Attendants and fall protection users must be trained in the signs and symptoms of suspension trauma and how to prevent reflow syndrome. The attendant must have immediate access to paramedic emergency services (Santa Barbara County Fire Department has the ability to arrive at most campus locations within five minutes), therefore a mobile phone must be present at the jobsite and on the attendant for quick dialing. For the worker suspended, utilize the suspension straps, perform techniques to keep blood circulating such as tensing leg muscles or periodically holding up one's legs into a seated position.

In the event of a fall notify the following people/Departments immediately:

- 9-1-1
- (805) 893-3346 UCSB Campus Police Dispatch
- Supervisor/Manager
- EH&S Program Administrator
- **Risk Management Incident Reporting**

Once the suspended worker has been safely rescued and brought to a flat level surface, have the individual sit upright with legs extended with back up against a flat surface such as a wall for at least thirty (30) minutes or preferably when paramedics take over care. The act of being upright will slowly allow blood to circulate back up to the heart and head, while lying flat will cause a rush of unoxygenated blood and potentially cause death. All fall victims must seek medical attention regardless of the severity of the fall to be evaluated to determine the extent of injuries even if none are apparent.

Post-fall, the worker's fall protection equipment must be kept in the exact condition when the worker doffed the equipment to be tagged out for inspection; never to be used again. EH&S will determine when/if disposal is acceptable. All falls will be investigated by the employee's immediate supervisor, their department Manager/Head, and EH&S. The following documentation will be completed as part of the fall investigation: interviews with staff and witnesses, employee injury/accident report, Supervisor injury/accident report, and a corrective action outline/plan.

VI. Types of Fall Protection Equipment (FPE)

A. General Requirements

All Authorized User's and Competent Person's must follow the general requirements for FPE outlined below:

- Only ANSI approved full-body harnesses, lanyards, SRLs, or other equipment designed as fall protection equipment will be used. Fabricating tools, components, or other devices or using something not designed, tested, and certified to be used in fall protection is prohibited.
- Fall restraint or fall arrest equipment must not be used in any manner other than fall protection (e.g., no hoisting equipment with an SRL).
- All lanyards (nylon webbing, rope, cable or SRLs) must be equipped with double action locking snap-hooks and be of a size compatible for the anchorages a worker will encounter. As a general rule of them, the larger snap-hook; the better. It may be necessary to have multiple sizes readily available dependent on the particular characteristics of each work location and anchors the jobs and tasks utilize.
- When working at heights where it is necessary to disengage a lanyard to move around equipment or obstacles, a double lanyard (or double-leg SRL) must be utilized to ensure fall protection, in other words 100% tie-off.
- Where risk of arc-flash exists or working over or near electrical equipment, arc-flash rated FPE must be utilized.
- Where welding or other hot work exists, hot work rated/Fire Rated (FR) equipment must be utilized.

B. Hierarchy of Fall Protection Controls

Hierarchy of Fall Protection Controls – The sequence of analysis for fall protection is:

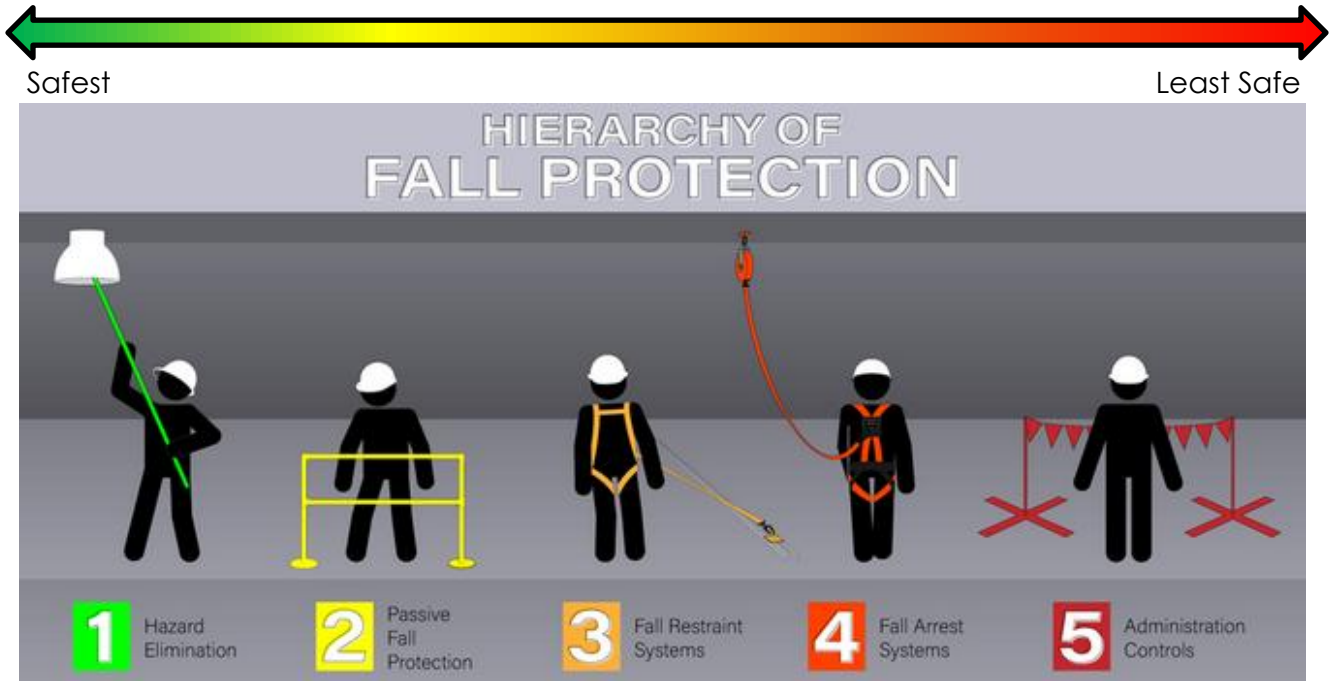
1. Elimination of working at heights or substitution by finding an alternative means to perform the same task. Examples: access/extension reach poles, aerial lifts, etc.

2. Passive Fall Protection installation, using guardrails and other fixed structural components to eliminate the requirement of individual worker safety (personal fall protection equipment).

3. Fall Restraint Systems, eliminating the worker from going over an edge. However, not as protective as passive elements.

4. Fall Arrest Systems, protecting a worker should a fall occur.

5. Administrative controls, restricting workers from certain areas and tasks or putting policies or stipulations in place to make jobs or tasks safe.



C. Passive Fall Protection

Passive Fall Protection systems are stationary devices that prevent workers from falling by creating a physical barrier around unprotected areas. They eliminate the need for personal fall protective equipment as well as the requirement for continuous training. Passive systems such as guardrails are the preferred fall hazard elimination tool according to OSHA, as they are designed, engineered, and installed to keep all persons safe. Engineers, Project Managers, Architects, etc. should incorporate passive fall protection elements into building designs and construction where possible.

See **8 CCR 3209** and **8 CCR 3210** for more information or see EH&S Program Administrator for guidance.

D. Fall Protection Equipment

Both personal fall restraint and arrest systems are comprised of three (3) components, they are easily remembered by the acronym "ABC":

1. **A**nchorage connector (or anchor)
2. **B**ody wear (or harness)
3. **C**onnecting device to join the body to the anchor (or lanyard)

FPE is selected and used to meet the design requirements for the following four categories of Fall Protection Systems: Fall Arrest, Fall Restraint, Positioning, and Suspension.

1. Anchorages

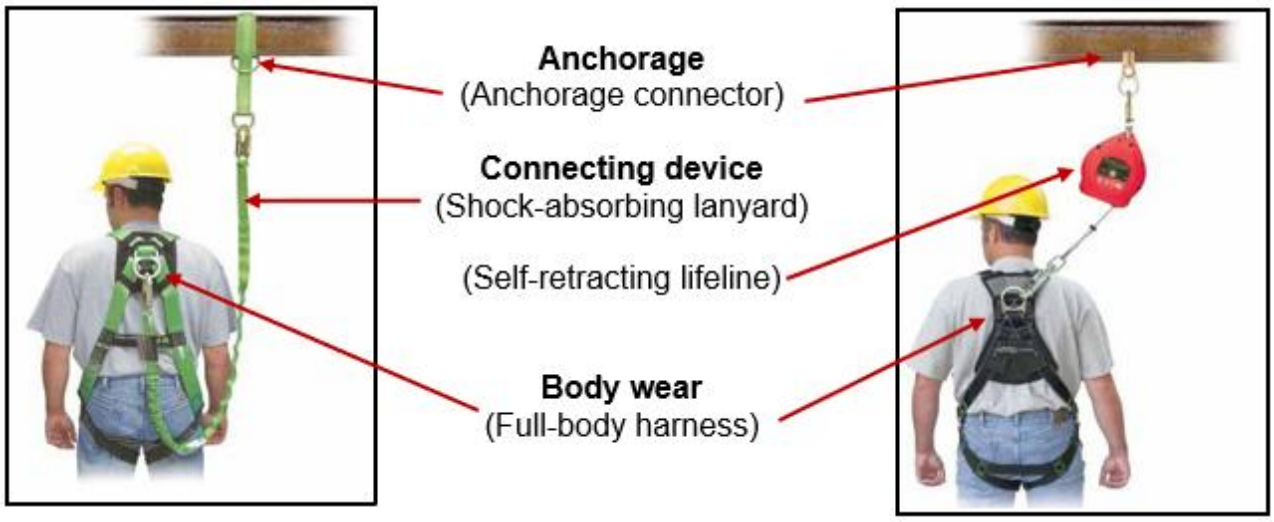
In general, all anchorages must be rated for at least a 5,000 lbs. load capacity. Only for positioning (only specific jobs and tasks will apply here), will a static load requirement of 3,000 lbs. be acceptable for an anchorage. In other words, an anchorage or anchor point must be able to support 5,000 lbs. (or 3,000 as mentioned previously for positioning). Suitable anchor points are typically steel I-beams or other structural members, welded fixtures, engineered and bolted (or screwed in) fixtures, a drilled hole within a structural member that has been engineered or designed to be used as an anchor point, etc. Typically, the anchorage design varies with the intended installation location whether in wood, steel, or concrete. There are many temporary and permanent devices and solutions for anchoring that have been invented to provide a safe and acceptable anchor for all fall protection scenarios. Some examples of anchoring include an I-beam adjustable clamp, various screw in or bolt on D-rings, nylon webbed tie-wrap, wire rope tie-wrap, beam straps, or roof anchors.

Anchor points can be vertical or horizontal in nature and application, but must be configured in such a way to allow the worker to perform their duties safely and with freedom of movement and provide sufficient anchorage so as to not cause a fulcrum or pivot point should a fall occur which could swing a worker and cause them to impact something. In order of the safest anchoring locations: anchor points above the head are best, followed by overhead but nearby, and finally horizontal. The reason vertical anchoring is preferred with directly overhead being the best; is to reduce swinging after the fall as much as possible.

All anchors must be inspected prior to use, and must be documented semi-annually. A certified anchor must be reviewed every five (5) years by a Qualified person and five (5) years thereafter for the life of the anchor to maintain its certification. Installation must be per manufacturer's specifications using fasteners recommended. In some fixed anchoring locations (roofs, sides of buildings, etc.) a preliminary analysis, proof testing, and incremental load testing must be performed by a Qualified person to ensure strength, integrity, and resiliency of the anchor and maintain a certification. Responsible Persons, Supervisors, and other Qualified Individuals must find the proper anchoring devices/locations for the specific jobs or tasks workers will encounter. Contact EH&S Program Administrator for consultation, guidance, and resources.

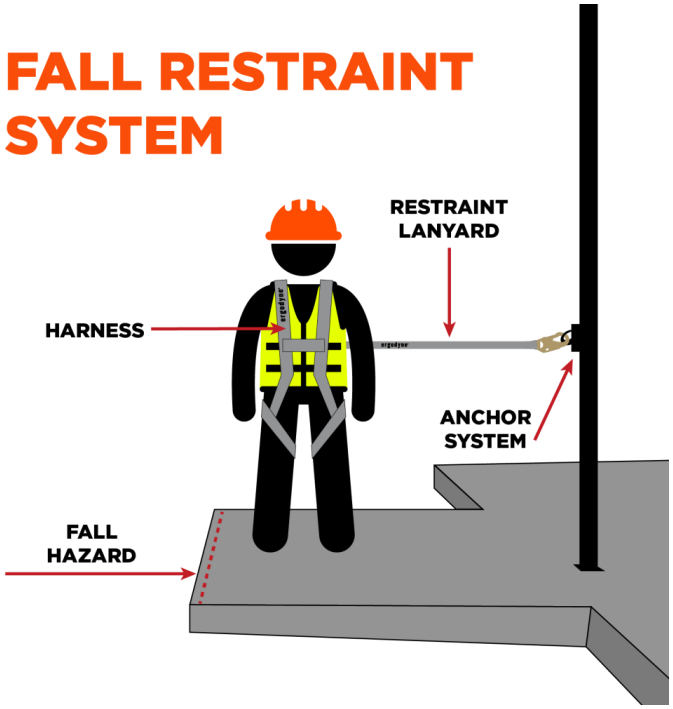
2. Fall Arrest System

A personal Fall Arrest System is used to slow and stop a person during a fall from an elevated location. As a general rule, it is recommended that a Fall Arrest System be used at working heights of four (4) feet or more. Engineered guardrails or other fixed structures may be necessary to limited exposure to falls and eliminate the need for fall arrest. Contact EH&S to assure compliance with codes prior to procuring and using Fall Arrest Equipment. The Fall Arrest System consists of:



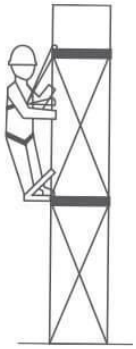
3. Fall Restraint System

A restraint system is used to restrict the worker's movement to prevent reaching a location where a fall hazard exists. A restraint system is not designed for fall arrest, and therefore, a back-up fall arrest system must be used where a fall may still occur. The anchorage must support four (4) times the intended load and be rigged to allow the movement of the employee only as far as the edges of the work area or task. Engineered guardrails or other fixed structures may be necessary to limited exposure to falls and eliminate the need for fall restraint.



4. Positioning System

A positioning system is used to hold a worker in place while allowing a hands-free work environment at elevated heights. Positioning systems include an anchor, full-body harness, and positioning lanyard. The positioning systems are not designed for fall arrest, and therefore, a back-up fall arrest system must be used. Anchorage An example of a positioning device would be a lineman's lanyard that goes around a pole while the worker is leaning back to maintain position while working.



5. Suspension System

A suspension system is typically used in the window washing, painting, and shipbuilding industries and are designed to lower and support a worker while allowing a hands-free work environment. The positioning systems are not designed for fall arrest, and therefore, a back-up fall arrest system must be used. A typical suspension system will consist of an anchor, full-body suspension harness (with built in seat) or boatswains chair and full-body harness, and lanyard.

6. Retrieval System

The retrieval system is primarily used in confined space applications where workers must enter tanks, manholes, vaults, etc., and may require retrieval from above should an emergency occur. Retrieval systems may also be used in rescue after a fall has occurred and the victim is hanging by the fall arrest system in suspension. Retrieval systems for subterranean applications typically employ a davit or tripod with winch. Retrieval systems at heights may consist of a Sealed Block SRL that can raise and control a descent of a suspended worker dependent on the location involved.

7. Suspension Trauma Straps

Suspension Trauma Straps are highly recommended to be on all personal fall protection harnesses. These devices help prevent suspension trauma which is a potentially deadly condition. All workers who use personal fall protection must be trained on how to properly use the straps to prevent suspension trauma. Prior to ascension at ground level, a worker must deploy the straps and test to know their individual "size" or which hole to utilize. As a rule of thumb, when the hook side of the strap is added to the loop or hole side of the strap to create a "U-shape" the bottom of the "U" should be at mid-shin level. Suspension straps are relatively inexpensive and can be added onto existing full-body harnesses already in storage or in the field. Installation and inspection must be performed by a competent person.

VII. Selection/Procurement of FPE

FPE is designed and constructed according to the American National Standards Institute (ANSI) standards to safely hold greater than twice the expected load in positioning systems and a specific amount of weight in fall arrest systems in the event of a fall. The design-load capacity includes a person's fully clothed weight plus the weight of any tools and materials that are carried that could be part of the load on the FPE during a fall.

Regulations require the load rating must be attached or permanently printed on each piece of equipment and must be readable by the person using the equipment. The user must be able to plan the use of the equipment based on the load capacity. The kind of personal fall arrest system selected should match the particular work situation, and any possible free fall distance should be kept to a minimum. Consideration must be given to the particular work environment, the presence of acids, dirt, moisture, oil, grease, etc., and their effect on the system. Hot or cold environments may also have an adverse effect on the system. Wire rope should not be used where an electrical hazard is anticipated, etc. Some equipment should not be used when welding or other hot work is being conducted due to the risk of fire, and specialized equipment is required.

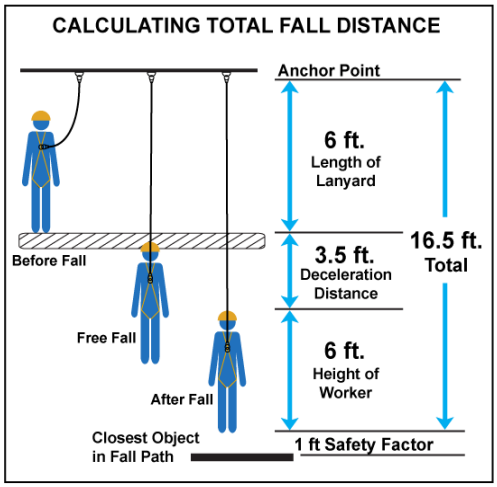
EH&S highly recommends using only full-body harnesses with at least four (4) D-rings (one located on the back or dorsal, one on the front chest or sternal, and two located on the sides or either hip) and a belt to provide back support and better ergonomic

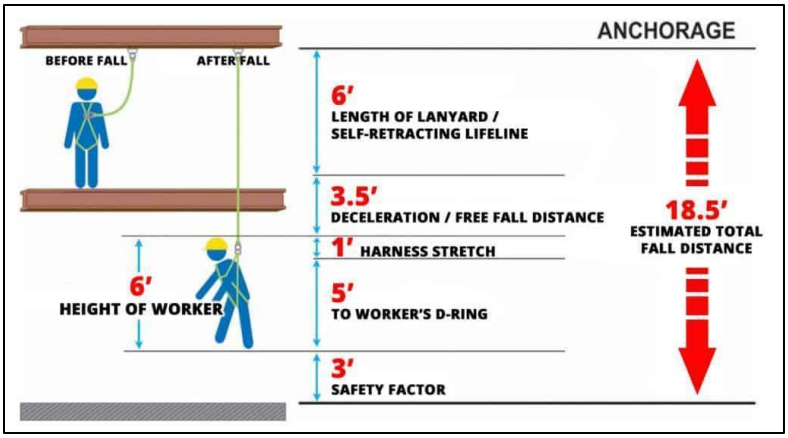
posture. This harness will cover most applications that require fall protection equipment and account for rescue, however, it is imperative to analyze locations where fall protection will be used to determine the best devices to mitigate hazards and keep the users safe. For workers who are exposed to electrical hazards while wearing fall protection; an arc flash rated harness and equipment is required. For welding or other hot work, workers must use a hot work rated harness and equipment. Cost should be considered, but cheaper is not necessarily better nor should it be the sole driver. Typically, some of the more expensive harnesses are more comfortable to wear, are manufactured better, have more safety features, have a better warranty or guarantee, and will last much longer with care and maintenance.

EH&S recommends the use of tool lanyards and other devices to prevent dropped objects while working at heights. Considerations should be made to utilize these devices to prevent injuries, damaged equipment, and unnecessarily ascending/descending more than required to get the job/task done safely and efficiently. When possible, implement the use of devices to attach tools or other PPE to your body to maintain being "hands-free" while ascending/descending. Alternatively, explore options to transport tools or materials without carrying altogether.

When analyzing lanyards for fall arrest, it is critical to calculate Total Fall Distance (TFD) to ensure the anchor location and lanyard with deceleration distance are sufficient for each job or task. This is even true when using an SRL or shock absorbing lanyard. To calculate the Total Fall Distance, add the length of the lanyard, deceleration distance of the lanyard, height of the worker (often just made to be a standard six (6) feet), and add a safety factor of at least one foot (1') to the closest object in the fall path (next level below, equipment, ladder, etc.). An alternative calculation is shown below. Many times, TFD is miscalculated or omitted and users of fall protection are putting themselves in harm's way with an invisible hazard (the potential impact below). Although SRLs, like seat belts, can stop almost immediately, they must still be analyzed for TFD and manufacturers will specify deceleration distances. SRLs are usually superior to nylon lanyards with shock absorbing elements or deceleration devices attached

(when the anchor is overhead). Contact EH&S for guidance or assistance in selecting equipment. See examples in the pictures below:





VIII. Requirements/Procedures

A. Evaluation and Mitigation of Fall Protection Hazards

Supervisors are responsible for evaluating work tasks and locations, and ensuring fall hazards/activities are identified and mitigated using the hierarchy of controls. Only when engineering controls such as guardrails cannot be used/implemented to adequately control fall hazards is FPE to be used to control fall hazards to personnel in a Department's operations/facilities. Always exhaust all work-at-grade alternatives prior to conducting work at height. Implementing the hierarchy of controls, a fall hazard is removed when protected by a guardrail, wall, parapet or similar structure.

B. Training Requirements

Fall Protection Approved Trainers

All persons working at heights must be trained by EH&S or an approved 3rd party vendor for initial, refresher, and retraining. EH&S or the approved 3rd party vendor will ensure that individuals are trained and competent in their responsibilities and abilities. Training will be in compliance with Cal/OSHA and OSHA regulatory requirements, but at a minimum consist of a "classroom" portion and a practical "hands-on" portion and be assessed with a test.

Training Frequency:

- Initially, when first hired and prior to working at heights.
- Prior to any changes in scope of work or work conditions.
- Determined by EH&S

Training for all individuals must be tailored to the hazards or scope the workers will encounter in the course of their jobs. Some workers may require more training than

others due to their scope of work and frequency or complexity of their jobs at heights. Workers are not authorized to exceed their scope of training. Contact EH&S Program Administrators for guidance.

Classroom Training

Classroom training must include familiarization and use of equipment, components, discussion of capabilities and limitations, hazard assessment and mitigation, equipment inspection requirements, and other requirements of this program. Successful completion is documented through a final exam that demonstrates the trainee's understanding of all elements of the Fall Protection Program with a passing grade of 90% or more.

Hands-on Training

Individuals may only proceed with Hands-On training after successful completion of the classroom section. Hands-On training and testing must be conducted using "real world" examples of what workers will encounter while working at heights. Hands-on training will be under the direct supervision of an EH&S approved Trainer or 3rd party vendor, who has the knowledge, training and experience to train and evaluate competencies. Field training includes demonstrations performed by the trainer, practical exercises performed by the trainee and observed by the trainer, as well as a documented evaluation of the trainee's performance on a standard "skills assessment" course.

Authorized User Certification

When the trainee successfully completes both written and hands-on testing, EH&S or approved 3rd party vendor certifies that the individual has been trained and evaluated as required by this program and Cal/Fed OSHA regulations. The Authorized User Certification is valid for three (3) years. However, refresher training may also be required if regulations or requirements, equipment, job tasks, or environmental conditions change significantly from those when original training took place or if an incident, injury, or significant near-miss has occurred (at the discretion of EH&S pending an investigation).

Competent Person Certification

The Competent Person designation is good for two (2) years. Competent Person training is different than Authorized User training in that there is added focus on the inspection and recordkeeping requirements. A Competent Person may also be an Authorized User, but must maintain both certifications to be compliant.

IX. Use of Fall Protection Equipment

All FPE Authorized User's must:

- Inspect all FPE for damage each time it is to be used. This includes but not limited to harnesses (and associated components), lanyards, SRLs, snap-hooks, anchors and anchoring components, suspension straps, etc.
- Don FPE properly and perform both a self-check and buddy-check if possible.
- Perform work within specifications and instructions of the manufacturer.
- Maintain proper tie-off 100% of the time required.
- Doff equipment, clean, and store properly according to manufacturer's specifications and instructions.
- Only a sealed-block SRLs may be left in place or installed if 1) it will be used for the duration of the particular project or 2) if the repetitive removal and installation would create an unnecessary hazard. Contact Supervisors and EH&S to analyze if a particular situation may allow for the SRL to remain installed.

X. Fall Protection Equipment Tracking and Inspections

FPE must be tracked to ensure inspections are being conducted as per regulatory requirements. A method to capture the last documented inspection date must be identified on each piece of FPE. A numbering system or equivalent system identifies each piece of equipment within a Responsible Person's inventory. Below is one example of a numbering system, however, a department may decide to keep track of equipment by developing their own system, using the serial numbers of the equipment, using the initials of the "issued to" personnel with department name, etc.

1. Example Identification Number for an Arts Department's Harness used by a shop supervisor: AD-SS-H01 3/9. It's the first one added to the inventory when it was first inspected, and since should be inspected about every six months (regardless of the frequency of its use). It should be inspected in March (the third month) and September (the ninth month): AD-SS-H01 3/9.

2. Example Identification Number for a Facilities Management/Grounds Department's Self-Retracting Lanyard used by an equipment operator: FMG-EO-SRL04 6/12. It's the fourth one added to the inventory when it was first inspected, and since it should be inspected about every six months (regardless of the frequency of its use) it should be inspected in June (the sixth month) and December (the twelfth month): FMG-EO-SRL04 6/12.

Marking and identifying various fall protection products made of webbing (i.e., belts, harnesses, lanyards, anchorage straps, etc.) is appropriate as long as acceptable materials or processes are used. Information such as Department name and inspection status is often applied to the product for proper identification.

The following guidelines should be observed and the special conditions noted:

1. Inspection status/log labels applied to the product at the time of manufacture or inspection can be used to record inspection dates.

2. Specific punches can be used on the inspection log label to represent the month the inspection was performed. The web must not be punched.

3. Separate identification tags/labels can be applied to the product. A location that will not interfere with the products performance should be selected (i.e., away from snap hooks, connecting rings, buckles, etc.).

4. The method of attaching separate identification tags should not affect the strength of the web. Riveting, punching holes or gluing the separate label to the web must not be performed. Plastic or zip tie type fasteners should be used. The fastener can be passed through or around a web or web loop (opening) for attachment.

5. Marking directly on the web can be performed with permanent type markers. Permanent markers which are waterproof/ water resistant and quick-drying (e.g., Avery® Dennison Marks-A-Lot® or Sanford Sharpie® permanent marker) should be used. Markers approved for use on launderable items are also approved.

6. Paint and/or paint pens should not be used to mark directly on the web. Paint can penetrate the web fibers, then dry and cause the fibers to break when flexed.

7. Some solvents used in inks and other marking products can cause loss of strength in webbing, especially at elevated temperatures and high concentrations.

8. All applicable user instruction manuals for the products should be reviewed and followed.

9. Employee training should be conducted at regular intervals to help assure a safe working environment.

Refer to the "User Instructions" or Owner's Manual provided with the product for more information specific to your product.

Inspection, maintenance, and repairs must be performed by an authorized, competent, or qualified person in accordance with regulatory requirements, the manufacturer's specifications and industry best practices. All FPE must have a manufacturer installed or applied information tag. The tag must be legible and

complete. If the tag is illegible or missing, notify a Supervisor and remove from service properly.

Inspections must be performed at the following intervals: prior to use by the individual Authorized User and a documented inspection performed every six (6) months by a trained Competent Person who the department designates (may be an RP, Supervisor, approved vendor, etc.). Certified anchorages must be inspected by a Qualified Person. It is imperative to inspect new equipment for defects in manufacturing, damage from shipping, or to ensure the equipment ordered is in fact what was delivered.

Records of inspections must document the date of inspection, any deficiencies found, the corrective action recommended and the identification of the persons or entities performing the inspection. Records of Repairs must include the date of any such repair, a description of the work accomplished and identification of the persons or entities performing the work; an invoice or receipt/report from the manufacturer that made the repair satisfies this requirement as long as a description of the work is provided.

Some personal FPE may have a service life expectancy, take equipment out-of-service (OOS) and dispose of properly that is beyond its service life. Consult the owner's manual or manufacturers guidelines regarding specific equipment in your responsibility. An evaluation of repair or replacement should be considered prior to performing service work on the equipment factoring in costs as well.

See Attachment 2: Fall Protection Equipment Inspection Guidance

XI. Equipment Cleaning, Maintenance, and Storage

All equipment must be cleaned, maintained, and stored as per the manufacturer's specifications with consideration to industry best practices. In general, a simple solution of dish soap and lukewarm water is sufficient for cleaning. Only qualified and authorized individuals may make repairs (such as a manufacturer authorized service center).

- Use the soap and water solution with a clean rag or sponge, do not submerge equipment unless manufacturer deems acceptable.
- FPE is not stored in the sunlight or in another source of ultraviolet light. Ultraviolet light degrades the condition of synthetic webbing. Store FPE in a dry clean place not subject to dust or weather. Hanging on storage hooks is a good location for webbing devices.

- FPE is not stored with weight over folded webbing. The webbing can be creased and therefore be damaged.
- FPE is not exposed to any solvents that could breakdown webbing. This includes products containing acetone, MEK, lacquer thinner or other similar solvents.
- FPE is not subjected to hot surfaces or welding splatter. Any burn marks on or stiffening of webbing due to heat will make the device unusable.

XII. PPE and FPE

Fall Protection Equipment must be used in coordination with PPE for a user's head, eyes, hearing, hands, feet, and body. The PPE used may change dependent on the conditions of the job or task, hazards, and specifics of the activities as required. PPE and FPE must be compatible with each other and not interfere with the effectiveness or compromise any portion or feature. At a minimum FPE should be used with:

- Hard hat or helmet
- Safety glasses
- Ear Plugs or ear muffs if exposed to noise above 85 dBA over a Time Weighted Average (TWA).
- Protective gloves sufficient for the work being conducted
- Safety Toe Shoes or Boots
- Coveralls, or combination of long pants and long sleeve shirts, or other sufficient body protection dependent on the work being conducted.

See Requirements for Work Clothing and Personal Protective Equipment (PPE) Policy.

XIII. References

The following standards and other resources were used to help dictate the requirements of this program:

- Title 29 CFR 1910.21, 1910.22, 1910.24, 1910.27, 1910.28, 1926.500 – 503
- Title 8 CCR 1604.1, 1605.19, 1620, 1621, 1632, 1633, 1637, 1658, 1660, 1663, 1664, 1669, 1670 1671, 1671.1, 1671.2, 1704, 1710, 1712, 1716.1, 1724, 1730, 3209, 3210, 3211, 3212
- ANSI Z359 Fall Protection Requirements
- **Injury and Illness Prevention Plan (IIPP)**
- **AL/EWP Program**

- Requirements for Work Clothing and Personal Protective Equipment (PPE) Policy
- UCOP Fall Protection – Trigger Heights
- Ladder Safety Program
- UCOP Performing Arts Safety Manual

XIV. Record Keeping Requirements

A. Responsible Persons

Responsible Persons must maintain accurate and readily available records of the following:

Record	Retention Requirement
Competent Person Equipment Inventory	Duration of Responsibility
Equipment Inspection Records	Most Recent 2 Records
Anchorage Inspection Records, Certifications, and Load Tests	Life of Equipment
Training Records	Most Recent Record

XV. Issued by and Next Review Date

Issued by: UCSB Industrial Safety

Date: April 8, 2026

Next Review Date: Every five years or earlier if deficiencies are identified or required by regulatory updates.

XVI. Attachments

Attachment 1: Fall Hazard Analysis
Attachment 2: Fall Protection Equipment Inspection Guidance
Attachment 3: Fall Protection Rescue Plan Sample Template
Attachment 4: Safe-Work Rules for Ladder Use

Attachment 1 – Fall Hazard Analysis

Answer these questions whenever you are about to work from an elevated location and may want to use FPE:

A. Will the work require special PPE (besides fall protection)?
B. How will I get equipment and tools to the work location?
C. Do I need to prevent my activities from resulting in hazards to those below by following appropriate barricading methods to keep non-essential personnel away?
D. Can I work from the ground level instead by bringing the work down?
E. Can I work safely from a ladder instead?
F. Can I use an aerial (boom) lift or scissor lift instead (and, am I qualified to operate one?)
G. If not, can we install portable guardrails for the job?
H. If not, can I use fall restraint?
I. If not, will I use fall arrest?

The goal is to find another way to perform the work without the necessity to use FPE and avoid the need of rescue. So, if you've chosen to use FPE, answer the following questions:

1. Are there any existing approved anchorage points I can use? Where?
2. Is it labeled as an approved anchorage point or obviously capable of holding 5,000 lbs. or more as determined by a Competent Person or Qualified Person?
3. If not, can approved pre-manufactured or engineered anchorages be installed?
4. Do I have the right equipment (full-body harness, minimum length lanyard, shock absorber, connecting hardware, I-beam strap, self-retracting lifeline, etc.)?
5. What is the clearance or distance I may fall into?
6. Is there at least 15-18 feet of clear space from anchorage point before the next level down? (Calculate fall distance to include lanyard length, deceleration distance, your height, one foot of harness slack, elongation factor, and a safety factor.)
7. What is between me and the ground or floor below?
8. What will I hit on the way down?
9. How would I be rescued if I fall and suspended in the harness? (Has the Fall Protection Rescue Plan Form been completed?)
10. Who is the attendant? Are they qualified (in other words, have they been trained)?

Attachment 2: Fall Protection Equipment Inspection Guidance

Body wear and connecting devices must have an undocumented inspection before each use by the FPE user, and a documented inspection semi-annually by a Competent Person. Both inspections follow the same inspection protocol as outlined below.

Harness Inspection

To inspect your harness, perform the following procedures:

Webbing – Grasp the webbing with your hands 6 inches (152 mm) to 8 inches (203 mm) apart. Bend the webbing in an inverted "U" as shown. The surface tension resulting makes damaged fibers or cuts easier to detect. Follow this procedure the entire length of the webbing, inspecting both sides of each strap. Look for frayed edges, broken fibers, pulled stitches, cuts, burns and chemical damage. Many manufacturers design an indicator line into the webbing or use a color code system, be sure to refer to the manufacturer's instructions for inspection.

D-Rings/Back Pads – Check D-rings for distortion, corrosion, cracks, breaks, and rough or sharp edges. The D-ring should pivot freely. D-ring back pads should also be inspected for damage.

Attachment of Buckles – Inspect for any unusual wear, frayed or cut fibers, or broken stitching of the buckle or D-ring attachments.

Tongue/Grommets – The tongue receives heavy wear from repeated buckling and unbuckling. Inspect for loose, corroded, distorted or broken grommets. Webbing should not have additional punched holes.

Tongue Buckles – Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Roller should turn freely on frame. Check for distortion, corrosion, or sharp edges.

Friction and Mating Buckles – Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment points at the center bar. Ensure no corrosion is present.

Quick-Connect Buckles – Inspect the buckle for distortion. The outer bars and center bars must be straight. Make sure dual-tab release mechanism is free of debris and engages properly. Check for corrosion.

Lanyard Inspection

When inspecting lanyards, begin at one end and work to the opposite end, slowly rotating the lanyard so that the entire circumference is checked. Additionally, follow the procedures below.

Hardware

Snaps – Inspect closely for hook and eye distortions, cracks, corrosion, or pitted surfaces. The keeper (latch) should seat into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper. Keeper locks must prevent the keeper from opening when the keeper closes.

Thimbles – The thimble must be firmly seated in the eye of the splice, and the splice should have no loose or cut strands. The edges of the thimble must be free of sharp edges, distortion, or cracks.

Wire Rope Lanyard – While rotating the wire rope lanyard, watch for cuts, frayed areas, or unusual wearing patterns on the wire. Broken strands will separate from the body of the lanyard.

Web Lanyard – While bending webbing over a pipe or mandrel, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Swelling, discoloration, cracks and charring are obvious signs of chemical or heat damage. Observe closely for any breaks in stitching. Refer to the manufacturer's manual for any color coding or wear indicators.

Rope Lanyard – Rotate the rope lanyard while inspecting from end-to-end for any fuzzy, worn, broken or cut fibers. Weakened areas from extreme loads will appear as a noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in period.

Inspection of Fall Arrest System

Shock Absorber Pack – The outer portion of the pack should be examined for burn holes and tears. Stitching on areas where the pack is sewn to D-rings, belts or lanyards should be examined for loose strands, rips and deterioration.

Shock-Absorbing Lanyard – Shock-absorbing lanyards should be examined as a web lanyard; however, also look for the warning flag or signs of deployment. If the flag has been activated, remove this shock-absorbing lanyard from service.

Self-Retracting Lifeline Inspection

Check Housing – Before every use, inspect the unit's housing for loose fasteners and bent, cracked, distorted, worn, corroded, malfunctioning or damaged parts.

Lifeline – Test the lifeline retraction and tension by pulling out several feet of the lifeline and allow it to retract back into the unit. Always maintain a light tension on the lifeline as it retracts. The lifeline should pull out freely and retract all the way back into the unit. Do not use the unit if the lifeline does not retract. The lifeline must be checked regularly for signs of damage. Inspect for cuts, burns, corrosion, kinks, frays or worn areas.
Inspect any sewing (web lifelines) for loose, broken or damaged stitching.

Braking Mechanism – The braking mechanism must be tested by grasping the lifeline above the impact indicator and applying a sharp steady pull downward which will engage the brakes. There should be no slippage of the lifeline while the brakes are engaged; once tension is released, the brakes will disengage and the unit will return to the retractable mode. Do not use the unit if the brakes do not engage.

Check the hardware as directed above. The snap hook load indicator is located in the swivel of the snap hook. The swivel eye will elongate and expose a red area when subjected to fall arresting forces. Do not use the unit if the load impact indicator has been activated.

Attachment 3: Fall Protection Rescue Plan Sample Template

Fall Protection Rescue Plan

Scope: This template is to be used as a site or job specific rescue plan when workers are using personal fall protection equipment while in aerial lifts, elevated work platforms, or otherwise working at heights. This plan must be discussed, completed, and posted on the job prior to work starting.

Date:	Work Description:
Work Location:	
Rescue Equipment Location:	

Before beginning work, review, and answer the following questions:

Check box for "Yes"	Comments:
☐ Have FPE alternatives been considered?	
☐ Has the rescue and FPE equipment been inspected and found to be in good condition?	
☐ Do Fall Harnesses have correctly installed suspension trauma straps?	
☐ Do all rescuers know how to use the rescue equipment?	
☐ Has communication been established and tested?	

Personnel	Rescue Equipment	Rescue Concerns
Rescuer(s): Emergency Contact(s): Phone Number(s): Closest Emergency Care:	☐ Ladder ☐ Aerial Lift/Elevated Work Platform ☐ Installed Emergency Lifting/Lowering Device (Controlled SRL with Winch/Rescue Tripod) ☐ Scaffold ☐ Life Boat & Life Ring ☐ First Aid Kit ☐ Other:	Describe hidden, latent, or other hazards that must be considered:

Rescue Procedures:

1. Make initial assessment of employee.	
2. Call 9-1-1 and (805) 893-3446	
3. Perform Self-Rescue.	
4. Fallen worker should deploy suspension straps if more time is required.	
5. Once rescued, sit against wall or tree with back vertical and legs horizontal until emergency response personnel arrive.	

Attachment 4: Safe-Work Rules for Ladder Use

1. Select a ladder that is the proper length and duty rating for the intended work.
2. The leaning-ladder or extension ladder must extend at least 36" above the edge of a roof/mezzanine and for every 4 feet of height, position the base of the ladder 1 foot away from the wall when properly installed (also known as the 4:1 ratio or 1 to 4 rule).
3. Select a ladder that will allow you to complete your desired task while remaining securely balanced, and you should never stand on the top two rungs of a step ladder or above four rungs from the top on an extension ladder.
4. Do not use electrically conductive (e.g. aluminum) ladders for electrical work or near live electrical parts.
5. Inspect the ladder for broken of defective parts prior to each use.
6. Remove damaged or defective ladders from use and notify department management of the problem ladder.
7. Do not place ladders where they can be accidentally struck or displaced.
8. If the ladder is used in an area where anyone could walk under it, the area must be cordoned off with a visual barrier such as yellow caution tape to alert pedestrians to the hazard of something falling from the ladder.
9. Ladders must not be placed in passageways, doorways, driveways, or any location where they may be displaced by activities conducted on any other work, unless protected by barricades or guards.
10. Tie, block, or otherwise secure portable ladders while in use.
11. Do not splice ladders together.
12. Face the ladder while ascending and descending.
13. If the ladder is being used where it is bypassing a passive/primary FPS (catwalk with handrail, scaffolding, etc.) then FPE must be used.
14. Keep your body (belt buckle) between the side rails of the ladder, and avoid over reaching to the sides (work only within the envelope of the ladder).
15. Do not place planks on the top cap or any other part of the ladder.
16. Do not use the X-bracing or other structures of the rear section of a stepladder for climbing unless the ladder is designed to be climbed from both sides. See Extension Trestle Ladders and similar.
17. Make sure that the ladder or stepladder is properly set up and that the spreader is locked in place before you.
18. Do not use the stepladder as a lean-to ladder.
19. Maintain a 3-point contact (two hands and a foot, or two feet and a hand) when climbing/descending a ladder.
20. Always use a tool belt and other "hands-free" carrying devices when ascending and descending a ladder.
21. When working aloft secure tools and supplies so they cannot fall from the ladder.