



## Proof of Training (Revised 3/5/19)

Print name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Fall Protection Program – Falls to Another Level, Slips or Trips, Impalement Hazards and Falling Objects

#### Purpose

To establish safety requirements that will protect workers from falling as well as provide protection from falling objects. With respect to workers falling these can generally be separated into two categories; falling from one level to the next and falling on the same level. With respect to falling objects they are typically hand tools or construction materials that fall into work zones below where they are being used.

#### Scope

This policy will apply to all work performed by employees and subcontractors including, but not limited to the following activities: construction, installation, demolition, remodeling, relocation, refurbishment, testing, and servicing or maintenance of equipment or machines and at other times when fall protection is required.

### Responsibilities

#### Management (Board of Directors and Project Managers)

Management is responsible for ensuring that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials) required to fully implement and maintain this program are readily available where and when they are required. Additionally, management will monitor the effectiveness of the program, provide technical assistance as needed, and review the program bi-annually.

#### Program Manager

Dave Simpson is responsible for the development, documentation, training and administration of the program. This position carries the responsibility of insuring this program is adhered to and that proper reporting is executed.

#### Supervisors (Superintendents and Foreman)

With respect to fall protection Unger Construction supervisors are the qualified person(s) on the jobsite. They have extensive knowledge, training and experience to solve or resolve problems relating to successful fall protection thereby meeting the requirements of a qualified person.

Supervisors are responsible for developing a site specific fall protection plan and for ensuring that a task specific job hazard analysis (JHA), also known as a safe work plan, is developed. The JHA will select, implement and document the appropriate site-specific control measures as defined within this policy. Supervisors will direct the work in a manner that ensures the risk to workers is minimized, adequately controlled and that practices defined by this policy will be followed.

Supervisors are responsible for ensuring Unger Construction employees and subcontractors are following expectations. Supervisors will be held accountable for enforcing the requirements of this program. Undesirable behavior will not resolve itself, therefore supervisors must be directly involved with modifying behaviors inconsistent with program expectations. Supervisors will be held accountable for enforcing Unger Construction's disciplinary program.

### Workers (Employees and Subcontractors)

Unger Construction has high expectations and requires safety excellence for each employee, crew, project and for our entire company. Workers are required to follow the minimum procedures outlined in this program. Workers are responsible for knowing the hazards and the control measures established in the JHA. Workers are responsible for using the assigned PPE in an effective and safe manner. Workers are responsible for stopping unsafe acts and correcting unsafe conditions on the spot as soon as they are discovered. Any deviations from this program must be immediately brought to the attention of your supervisor. Workers that choose to conduct themselves in a manner that is inconsistent with these expectations will be held accountable for those decisions and may incur disciplinary actions. It is the responsibility of all workers to: understand and adhere to the procedures outlined in this Fall Protection Program, bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees and subcontractors and report any incidents or accident that causes injury to an employee, regardless of the nature of the injury.

### Job Hazard Assessment (Safe Work Plan)

Unger Construction utilizes JHA's as our means of hazard assessment and establishing a safe work plan. JHA's are performed by supervisors and/or workers. Our library of hazard assessments is maintained on the "S" drive. Before beginning a new task refer to the JHA library, generally speaking all scopes of our work are covered. For situations that have not yet been covered select one that is substantially similar and use it as a baseline. JHA's on the "S" drive are organized by work area and job description. JHA's include strategies for elimination, substitution, engineering and administrative controls. After applying all appropriate reduction and elimination technique, the remaining hazards will be analyzed and the proper PPE to reduce the hazards will be selected. PPE will be identified for hazards that are in the process of being reduced or eliminated and/or when hazard-reduction efforts are not 100% effective in eliminating the hazards.

For complex or moderate to high hazard tasks, tasks where an additional level of safety planning is needed, our safety director will perform the JHA with the supervisor and workers.

### Alteration, Modification, Servicing, Repairing

All fall protection equipment shall meet or exceed ANSI A.10.14-1991, and all related ASTM or OSHA requirements. Fall protection equipment shall be used in accordance to the manufacturers intended design and function and per their written instructions. Fall protection equipment cannot be modified or altered in any way without written approval from the manufacturer or formal approval from a Professional Engineer registered in the State of California. Additionally, approval shall be received from Unger Construction's Director of Safety, Director of Risk Management and the Vice President of Operations.

Users must read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, warnings and limitations. Fall protection equipment shall be only used, serviced and repaired by qualified personnel.

### Training

In order to perform work in elevated positions workers must have been trained in the fall protection systems that apply to their scope of work, the engineering/administrative controls and the proper use of personal protective equipment which includes the limitations, inspection and proper fitting. Each employee must demonstrate an understanding of the required training, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

All workers who may be exposed to fall hazards are required to receive training on how to recognize such hazards, and how to minimize their exposure to them. Workers shall receive training as soon after employment as possible, and before they are required to work in areas where fall hazards exist.

Training of workers shall include: the nature of fall hazards employees and subcontractors may be exposed to. The correct procedures for erecting, maintaining, disassembling and inspecting fall protection systems. Use and operation of controlled access zone, guardrail, personal fall arrest, safety net, warning line and safety monitoring systems. The role and authority of the Safety Monitor (if one is used), Limitations on the use of mechanical equipment during roofing work on low-slope roofs (if applicable), Correct procedures for equipment and materials handling, and storage and erection of overhead protection, the role of each employee in alternative Fall Protection Plans (if used).

Additional training shall be provided on an as needed basis when changes are made to this Fall Protection Program, an alternative Fall Protection Plan, or the OSHA Fall Protection Standard has been revised.

Proof of training is available on the "S" drive. The training data base can be sorted by employee name or by subject. This ensures supervisors and employees are able to confirm they have the necessary training and if they don't which employees do. Employees that need training should contact their project manager or superintendent to make arrangements for them to be trained.

### Retraining

The need for retraining will be indicated when: An employee's work habits or knowledge indicate a lack of necessary understanding, motivation or skills, New equipment is installed that requires new or different PPE, Changes in the workplace make previous training obsolete, Changes in the types of PPE to be used make previous training obsolete or Upon a supervisor request.

## **Typical Fall Protection Applications**

### Holes

Covers or guardrail systems shall be erected around holes that are 7-1/2 feet or more above lower levels. If covers or guardrail systems must be removed, employees and subcontractors are required to use a personal fall arrest system. Holes in walking surfaces that exceed 2 inches in diameter must be covered. Holes that are cored or cut into walking surfaces must be covered directly by the employee/subcontractor responsible for the hole. The cover must be capable of supporting 400 pounds or twice the weight of employees and equipment that may be imposed on one square foot of area whichever is greater. This gets complicated when equipment can be transported over the cover. Pallet jacks and scissor lifts can exceed 1,000lbs per square foot. To resolve this issue build a curb or box cover that will prevent equipment from being able to drive on the cover.

Covers must be secured to prevent unintentional shifting or accidental displacement. Covers must be labeled with letters not less than one inch high stating "Opening – Do not Remove without written permission".

In multiple story buildings with active fire sprinklers and plumbing fixtures the hole covers should be sealed to prevent accidental water excursions from one level of the building to another, as soon as the hole is exposed. Refer to our water intrusion policies.

### Leading Edges (Roofs, Walking Surfaces and Shaft ways)

When employees and subcontractors working within 6 feet of a leading edge that is 7-1/2 feet or more above lower levels a Passive systems such as guardrail/positioning system or an Active personal fall arrest systems shall be used.

### Roofs and Other Sloped Surfaces

A combination of passive fall protection systems (Railing and Positioning devices) are required when working within 6 feet of a leading edge on a sloped roof. Active fall protection is required for sloped roofs steeper than 7:12 and for any sloped surface steeper than 40 degrees that has a fall hazard greater than 7- 1/2 feet to the next level.

### Wall Openings

Guardrail systems or a personal fall arrest system will be provided to employees and subcontractors working on, at, above or near wall openings when the outside bottom edge of the wall opening is 4 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface.

### Ramps, Runways, and Other Walkways

Employees and subcontractors using ramps, runways, and other walkways 7-1/2 feet or more above the lower level shall be protected by guardrail systems.

### Skylight and Other Roof Features

Skylights and other roof features that are not designed or rated to be working surfaces shall be treated as holes in walking surfaces and shall be protected appropriately.

### Roof Hatches and Grab Bars

Roof hatches that are left open are considered holes in walking surfaces thus they must have protection from exposed openings if they pose a fall hazard greater than 7 -1/2 feet. A railing system with a self-closing gate is the simplest and most effective means of protection. Upon entering or exiting a hatch, the gate automatically swings shut to maintain a barrier around the opening.

Grab bars provide a steady hand hold that enables the worker to enter and exit the roof in an upright and balanced position. Many railing systems offer the benefit of a built in grab bar however, not all railing systems have a grab bar. In these situations a telescoping grab bar should be installed on the fixed ladder.

### Ladder Way to an Elevated Location

Ladder ways that are used as access points to an elevated location require guardrails or turn backs to prevent workers from accidentally walking off of the unprotected edge of the roof.

### Protection from Falling Objects

The work areas directly below and encompassing the potential drop zone of elevated workers shall be barricaded to prevent fellow workers from inadvertently working below elevated workers. Signs shall be posted to warn workers of the hazard.

When guardrail systems are in use toe boards shall be erected along the edges of overhead walking/working surfaces. Toe boards shall be solid and capable of withstanding a force of at least 50 pounds. Typically toe boards are 1 x 4 lumber or metal studs but could be any material that meets or exceeds this criterion.

## **Impalement Hazards**

There are two types of potential impalement hazards that are part of the construction process: 1) Materials/items that protrude vertically into the work space such that workers could fall and come in contact with them for example rebar, dowels, anchor bolts, specialty metal, metal conduit and other similar projections. 2) Materials/items such as protruding nails, screws and staples and other debris in which workers could step on or otherwise come in contact with. Both types of impalement hazards require protection.

The proper protection for protruding items similar to nails and screws is to remove them, bend them over or cover them in a manner such that workers cannot be impaled.

The proper protection for protruding items similar to rebar is relatively complex as a number of factors come into play such as working at the same level of the protruding material or above the protruding material. Workers working at the same grade level as the protruding material shall be protected against impalement hazards by railings, barricades or protective covers placed over the protruding material. Protective covers shall be made of wood, plastic or other materials of equal or greater strength. Protective covers shall have a minimum surface area of 4 inch by 4 inch or if round a minimum diameter of 4 ½ inches. Protective covers must be capable of resisting a 250-pound weight dropped from a height of ten feet without penetration of the cover, known as the 10 foot drop test.

To determine if an object similar to rebar is an impalement hazard use the following rule of thumb. If the object extends more than 4 fingers it must be capped. Items that extend less than 4 fingers are not considered impalement risks though they could be considered a laceration risk and should therefore be protected by some means. Protrusions taller than 6 feet in height are not considered an impalement hazard for those that are working at grade level, therefore they do not need to be covered. However, this same protrusion does present an impalement hazard if a worker is above the protrusion. For example workers on a ladder or elevated surface that could fall onto the protrusion. In these situations the 6 foot high protrusion would need to have an impalement cover.

Care needs to be taken when workers are working above a protrusion that is similar to rebar. Fall protection regulations are tuned to specific trades which can create confusion with respect to impalement hazards, specifically Metal deacker's and Iron workers. Metal deacker's are allowed to work up to a height of 15 feet above the next level without fall protection and Iron workers connecting structural steel are allowed to work up to 30 feet without fall protection. In these situations protrusions similar to rebar shall have an impalement cover.

Recent modifications to the impalement regulations have rejected formerly approved practices as proper methods of protection, for example hooking or bending of rebar to eliminate a vertical hazard. Rebar that is hooked, bent or candy caned must be protected with a job-built cover or protective trough that is capable of passing the 10 foot drop test.

## **Slips and Trips - Falls on the Same Level**

Most injuries resulting from falls aren't caused by falls from overhead, as you might think. They are from falls at the level where we walk and work. The extent of injuries and their recurrence can be minimized through situational awareness and timely housekeeping. There are various ways to suffer slips and trip falls while working. You can slip and lose your balance; you can trip over objects left improperly in your path of travel

### Slips

To avoid slips, be on the lookout for foreign substances on the floor. Watch for "deposits" of water, food, grease, oil, sawdust, soap, or debris. Even small quantities are enough to make you fall. If you observe a "deposit" clean it up, remove it, notify co-workers, place a barricade or high visibility warning device (cone or stanchion) or contact your supervisor. Don't leave a slip hazards in the work area. Do something, don't ignore it.

When entering a building from the outdoors or from debris areas, clean your footwear thoroughly. Rainy weather requires a walk off or door mat at each entrance to allow for complete wiping of shoes.

### Trips

Beware of tripping hazards. Any object left in the aisles or other areas designed for pedestrian traffic invites falls. Equipment, surplus material and spare parts should be kept neatly in one place or properly barricaded. Remove rubbish and scrap constantly throughout the work day, don't wait until the end of the shift. If equipment or supplies are left in walkways, report it to your supervisor. Don't leave trip hazards in the work area. Do something, don't ignore it.

Walk where you're supposed to walk. Short cuts through active construction areas invite accidents.

Hold on to handrails when using stairs or ramps. They are there to protect you should a fall occur. If you're carrying a heavy load which hampers your ability to properly ascend or descend stairs, use the elevator.

### **Passive Fall Protection Systems (prevent a worker from falling)**

Passive fall protection systems are used to prevent someone from falling they include but are not limited to guardrails, holes covers and fall restraints.

Guardrails may be used in lieu of covers. Guardrails are a substantial building component located near the open sides of elevated walking surfaces for the purpose of minimizing the possibility of an accidental fall to a lower level.

The top rail of a guardrail must be between 42-45 inches from the walking surface; these are hard dimensions and not estimates. The mid rail must be halfway between the top rail and the walking surface. Guardrails must resist a load of 200 lbs. in all directions, except up.

Guardrails and covers cannot be removed, altered or modified without written approval from Unger Construction which will include the alternative means of protection (engineering, administrative controls or PPE) that will be used.

### Fall Restraint Devices

Fall restraints are designed to prevent the worker from being able to reach the point of the fall hazard (they can't jump off if they wanted to). In essence the fall restraint tethers the worker into a safe zone. The anchorage requirement for a fall restraint is 4 times the intended load. For example a person weighing 250 pounds should be attached to an anchorage point that is capable of withstanding 1,000lbs. Connecting devices shall be dual action, self-locking and have a minimum tensile strength of 5,000 pounds

### Warning Line Systems

Warning line systems consisting of supporting stanchions and ropes, wires, or chains shall be erected around all sides of roof work areas. Lines shall be flagged at no more than six (6) foot intervals with high-visibility materials. The lowest point of the line (including sag) shall be between 39 inches from the walking/working surface. Stanchions of warning line systems shall be capable of resisting at least 16 pounds of force. Ropes, wires or chains must have a minimum tensile strength of 200 pounds.

Warning line systems shall be erected at least six (6) feet from the edge, except in areas where mechanical equipment is in use. When mechanical equipment is in use, warning line systems shall be erected at least six (6) feet from the parallel edge and at least ten (10) feet from the perpendicular edge.

## Positioning Devices

Positioning devices have limited and restricted uses and cannot be used as conventional fall arrest devices. They are most commonly used for work performed on a form wall or rebar cage. In these applications the worker is leaning back and using both hands to perform their work. Positioning devices must be rigged to prevent a free fall of less than 2 feet and should be anchored to a device capable of restraining 2 times the intended load or 3,000 pounds whichever is greater. Connecting devices shall be dual action, self-locking and have a minimum tensile strength of 5,000 pounds.

### **Active Fall Protection Systems (safely stop a worker that is falling)**

Active fall protection systems have a number of configurations and set-up options. With that said they shall be installed such that the worker cannot free fall more than 6 feet before the fall arrest system is deployed. Generally speaking this requires an anchorage point above the workers waist.

## Conventional Fall Arrest Devices

Conventional fall arrest devices are used to limit the free fall distance and arrest a person that is in the act of falling. Active fall protection systems have 3 components which include 1) a full body harness, 2) a means of tethering the worker such as a lanyard (tethering/connecting devices shall be dual action, self-locking and have a minimum tensile strength of 5,000 pounds) 3) a rated anchor point (strength of 5,000 pounds) such as a structural member or life line connected to structural members. Each active fall protection system must have all 3 components.

## Anchorage Point

Anchorage must support at least 5000 pounds per person attached and shall be: designed, installed and used under the supervision of a qualified person; capable of supporting twice the weight expected to be imposed on it; and independent of any anchorage used to support or suspend platforms.

## Full Body Harness

Only full body harness systems that meet or exceed regulatory requirements can be used. Body belts are prohibited.

## Deceleration Devices – Lanyards- Rip Stitch or Retractable (Yo-yo)

Deceleration devices must ensure the forces placed upon the falling workers body do not exceed 1,800 pounds.

Fall protection lanyards are deceleration devices that limit the free fall distance and decelerate the falling worker. They can be constructed of a rip stitch material or a retractable device commonly referred to as a Yo-yo. These lanyard devices perform a similar function however; their usage criteria are specific and unique. Lanyards cannot be used in series or in combination with any other deceleration device.

The free fall distance for these devices are different thus the requirements for the anchorage points are different. The free fall distance for a rip stitch decelerating lanyard is typically 4 feet. Thus the anchorage point is required to withstand a load of 5,000 pounds. Retractable lanyards typically limit the free fall distance to less than 1 foot thus the anchorage point is required to withstand a load of 3,000 pounds

Retractable lanyards or Yo-yo's are popular because they can be used to attach to a lower more convenient point and they require a less stout anchorage point. Yo-yo's have a distinct disadvantage in that the anchorage point must be directly above the worker to be in compliance with OSHA's maximum 4 foot free fall. Workers attached to a Yo-yo could

have a false sense of security thinking they are protection when they actually are not. Yo-yo's enable the worker to travel horizontally from the anchorage point, meaning the anchorage point is no longer directly overhead. Because Yo-yo's are available in lengths from 4-50 feet the worker could extend the length of the Yo-yo, from the anchorage point, a distance that could exceed the distance to the fall distance to the next level. Which means the worker could step off the edge, fall and strike the next level before the Yo-yo's fall sensing device knew the worker was falling. Additionally, Yo-yo's have the potential for a swing fall hazard. The falling worker could swing like a pendulum into an object that could injure the worker. Care must be taken in setting up a proper anchorage point or example a horizontal life line to ensure the anchorage point was directly above the worker. Another rule of thumb is to use the shortest possible length Yo-yo.

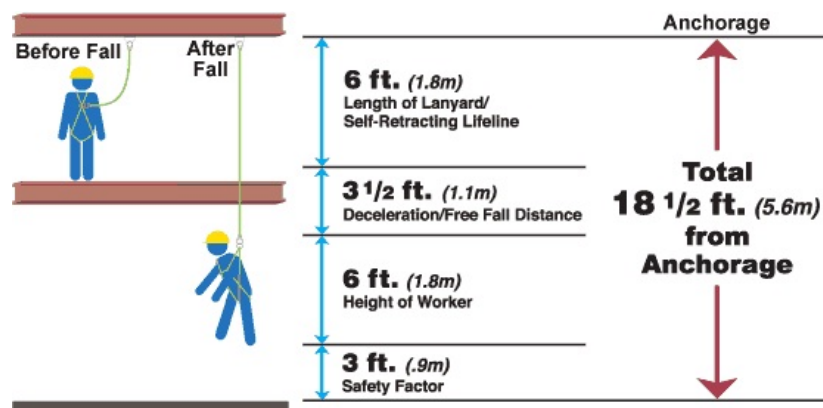
Yo-yo's have a fall sensing device that activates if the fall exceeds 4.5 feet per second. Some roof pitches and some grade angles are not recommended for Yo-yo's because the worker could fall/slip at a rate that is less than 4.5 feet per second and therefore they would continue to fall until they reached the end of the Yo-yo's length.

Yo-yo's cannot be used in series or in combination with any other deceleration device

In order to select the appropriate system the user must understand how to calculate the fall arrest clearance distance. This is demonstrated on the next page.

### Calculating Fall Arrest Clearance Distance

It is important that employees and subcontractors be trained in calculating the fall arrest clearance distance. In the event of a fall it is important to ensure that the worker will not free fall more than 6 feet or while in the act of falling come in contact with the floor or some other solid object before their fall has been properly arrested.



The typical height that a decelerating lanyard must be connected to protect the worker is approximately 18 feet from the object that would stop the fall.

### Controlled Access Zones (CAZ)

Unger Construction shall ensure that the CAZ is clearly marked and controlled by a competent person. All access to the CAZ shall be restricted to authorized entrants only. All workers who are permitted in the CAZ must be listed in the Pre-task plan or JHA. When CAZ's are utilized all points of access shall be enclosed, including material handling and storage areas. All workers in the controlled access zone shall be protected from falling by wearing personal fall arrest systems.

When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees and subcontractors to stay out of the controlled access zone. When control lines are used, they shall be erected not less than 6 feet nor more than 25 feet from the unprotected or leading edge. The control line



shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end.

Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows: Each line shall be flagged with a high-visibility material at six (6) foot intervals or otherwise clearly marked at not more than 6-foot intervals with high-visibility material. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches. Each line shall have a minimum breaking strength of 200 pounds.

### Safety Monitoring System

Safety monitoring systems are only to be used when convention fall protection is infeasible. In situations where no other fall protection can be implemented a safety monitoring systems can be utilized. Safety monitoring systems need to be reviewed and approved by Dave Simpson.

The safety monitor shall be: competent in the recognition of fall hazards; capable of warning workers of fall hazard dangers; shall be positioned on the same surface as the workers exposed to the fall hazard and able to see all of them 100% of the time; close enough to work operations to communicate orally with employees and subcontractors; and free of other job duties that might distract from the monitoring function. Safety Monitors shall not be involved in discussions that could prevent them from observing all workers within the safety monitoring area. Safety monitors cannot use their cell phone or any other device that could distract them while workers are at risk.

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. Each worker in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors. The safety monitor must be present for the full duration of the exposure. They must be present 100% of the time the work is being performed. Workers and the safety monitor must take breaks and lunch at the same time.

No employees and subcontractors other than those engaged in the work being performed under the Safety Monitoring System shall be allowed in the area.

### Personal Fall Arrest Systems

Personal fall arrest systems shall be issued to and used by employees and subcontractors as determined by the qualified person and may consist of anchorage, connectors, body harness, deceleration device, lifeline, or suitable combinations. Personal fall arrest systems shall: limit the maximum arresting force to 1800 pounds; be rigged so an employee cannot free fall more than six (6) feet or contact any lower level; bring an employee to a complete stop and limit the maximum deceleration distance traveled to three and a half (3-1/2) feet; and be strong enough to withstand twice the potential impact energy of an employee free falling six (6) feet (or the free fall distance permitted by the system, whichever is less). All components of a fall arrest system shall meet or exceed ANSI, ASTM and OSHA specifications. OSHA Fall Protection Standard, and shall be used in accordance with manufacturer's instructions.

### Lifelines

Live lines both horizontal and vertical shall be: designed, installed and used under the supervision of a qualified person. They shall be protected against cuts, abrasions and equipped with connection devices capable of locking. Connecting devices shall be dual action, self-locking and have a minimum tensile strength of 5,000 pounds.

### Inspection

Fall protection equipment must be inspected by the user before each use for; damage, wear, deterioration and be removed from service if any damaged components are detected. Report any defective equipment to your supervisor. Damaged or defective equipment must be taken out of service immediately and red tagged. At least twice per year the fall protection equipment shall be inspected by a qualified person, generally speaking around Christmas and the 4<sup>th</sup> of July. Damaged or defective equipment must be taken out of service immediately and red tagged. If a fall event occurs all components of the fall protection systems shall be individually inspected by a qualified person. Damaged or defective equipment must be taken out of service immediately and red tagged. Fall protection equipment can only be repaired by a certified representative of the manufacture.

### Emergency Response (Rescue) Plan

Whenever an active fall protection system is utilized a formal and documented emergency response/rescue plan shall be developed and included in the JHA. The plan must provide prompt rescue in the event of a fall for workers that are not able to self-rescue. Materials and equipment necessary to successfully execute a rescue shall be staged directly in the elevated work area. Prior to performing work the rescue team shall simulate rescue operations in which they remove dummies, mannequin or persons. This rescue training requirement (practice) can be waived if training occurring less than 12 months ago.

### **Site Specific Fall Protection Plans**

Working at elevations more than 7 ½ feet from a lower level requires some means of fall protection. Fall protection can be accomplished by engineering controls, administrative controls, personal protective equipment or a combination of all three. Fall protection options are numerous, each fall protection situation will be evaluated on an individual basis. Pre-task plans, job hazard analysis and site specific fall protection plans shall be developed to cover all situations where a fall could occur. Fall protection plans must include provisions for rescue of a fallen worker.

The site specific fall protection plan shall be developed by a qualified person and be specific for each construction project. The plan needs to be maintained (kept current) and encompass all phases of the work that occurs at elevated heights. Site specific fall protection plans shall be developed by a qualified person after they have evaluated the worksite and determined the types of fall protection to be used. Fall protection plans shall be reviewed and approved by Unger Construction's Safety Director prior to the start of work.

Fall protection systems can generally be separated into three distinct applications: 1) passive fall protection, 2) positioning devices such as fall restraints and 3) active fall protection systems. Each system has its benefits and limitations. Knowing these limitations and how to calculate the personal fall arrest clearance distance are critical factors to ensure workers will not be injured.

Example fall protections plans are included as attachments to this program.

### **Administration**

#### Accident Incident Investigations

All fall protection incidents or accident regardless of their nature or severity shall be reported and investigated. Investigations shall be conducted by Dave Simpson as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence. After the investigation the Fall Protection Program shall be reevaluated by to determine if additional practices, procedures or training are necessary to prevent similar future incidents.

### Changes to the Plan

Any changes to the Fall Protection Program shall be reviewed and approved by Dave Simpson. Affected employees and subcontractors shall be notified of all procedure changes, and trained if necessary.

### Enforcement

Constant awareness of and respect for fall hazards, as well as compliance with all safety rules, are considered conditions of employment with Unger Construction. The crew supervisor or foreman, as well as Dave Simpson or company management, reserve the right to issue disciplinary warnings to employees and subcontractors, up to and including termination, for failure to follow the guidelines of this plan.

Photos of our Fall Protection Equipment

Owner's manuals for each of these Items can be found on the "S" Drive, shared, safety, fall protection, manuals

Roof Anchors



Beam Clamp



Removable Embed



Cable Tensioner



Positioner – Form Wall Climber



Rope Grabs



Ropes and Horizontal Lifelines (25', 40', 50', 70')



Carabiners



Extender



Ladder Extension



Dual Lanyard



Lanyards (3', 4', 5', 6')



Beam Straps (3', 4', 6', 7', 10', 20', 30')



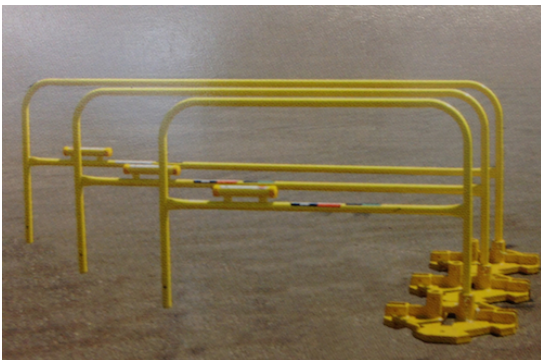
Harnesses



Retractable "yo-yo" (9', 10', 11', 12', 25', 30')



Railings



**Example - SITE SPECIFIC FALL PROTECTION-**

Worker: \_\_\_\_\_ Date: \_\_\_\_\_

(Print Name)

Person conducting the orientation: \_\_\_\_\_

(Print Name)

- Fall protection violations have zero tolerance. If in doubt, stop and contact the Unger superintendent or foreman.
- We expect **everyone** to observe safety rules established for employee protection, abide by all laws and regulations, use safety equipment and devices as provided or required, and to always work in a manner which safeguards yourself and fellow workers. All workers must comply with or exceed the requirements of Cal- OSHA Construction Orders Title 8.
- No worker should undertake a job that appears to be unsafe.
- Workers are to report all unsafe conditions encountered during work.
- “Supervisors” (foreman, superintendents, team leads) are responsible for the safety of their employees and are required to enforce the safe work rules. To assure compliance supervisors will be held accountable for the conduct of the workers on their crew. The safety and health of workers must receive consideration throughout all phases of the work.
- The safety and health of each employee is the responsibility of the supervisor however, each employee is expected, as a condition of employment, to work in a manner which will not cause injuries to themselves or to others.
- Inspect your fall protection gear daily. Questionable gear shall be red tagged and taken out of service immediately.
- The parapet wall height is too low to act as a fall protection railing. You cannot approach within 6 feet of the leading edge without fall protection. Delineators and red tape indicate the 6’ line.
- To remove equipment from the roof workers must use the loading bay which is on the North side of the roof. The loading bay utilizes a fall restraint system that is designed to prevent workers from falling. The fall restraint system has an anchorage point and a positioning system via rope and a rope grab or a retractable lanyard that cannot reach the leading edge from the anchorage point.
- The rope grab must be adjusted to position workers such that they could not reach the leading edge even if they had the desire to, thereby preventing them from being able to fall. Note: this is not an active fall protection device.
- Rope grabs are sensitive to direction of travel and will only work when properly installed. Not all rope grabs are designed the same. Make certain to inspect each rope grab before you connect to it.
- Stopper knots might be required to readjust the workers position as the opening for the accelerator changes in size. The proper stopper knot is a figure 8. Demonstrate that you can tie a proper stopper knot to the person conducting the fall protection orientation.
- The HVAC openings and skylights are not rated as a walking surface nor should they be used to stage or store materials. The HVAC openings and the skylights must be protected by red barricade tape or by a rated cover. To protect the openings on walking surfaces you can use 2 layers of ¾ inch plywood. The plywood must extend at least 12 inches past the hole to get proper bearing and the plywood must be screwed or shot into the substrate to prevent inadvertent movement. Additionally, each opening must have one of the laminated signs (opening do not remove without written permission)
- Rescue: Since we are using passive fall protection to prevent a fall no rescue plan is required.

By signing below, I verify I understand the on-site privileges, services and expectations. Failure to comply will lead to disciplinary actions up to and including dismissal from the job site. I understand how to inspect my harness, rope, rope grabs, anchorage points, lanyards and carabineers. I understand that the fall restraint system is designed to prevent me from getting to the leading edge, such that I cannot possibly fall. I understand that the rope grabs and stopper knots are key elements of my protection. I’ve been instructed on the proper direction and placement of the rope grab and how to tie an appropriate stopper knot.

Worker Signature: \_\_\_\_\_





## Example of an Alternative Fall Protection Plan SITE SPECIFIC FALL PROTECTION PLAN

Worker: \_\_\_\_\_  
(Print Name)

Date: \_\_\_\_\_

Person conducting the orientation: \_\_\_\_\_  
(Print Name)

- Fall protection violations have zero tolerance. If in doubt, stop and contact the Unger superintendent or foreman. At no time can a worker be on the roof without fall protection.
- We expect **everyone** to observe safety rules established for employee protection, abide by all laws and regulations, use safety equipment and devices as provided or required, and to always work in a manner which safeguards yourself and fellow workers. All workers must comply with or exceed the requirements of Cal- OSHA Construction Orders Title 8.
- No worker should undertake a job that appears to be unsafe.
- Workers are to report all unsafe conditions encountered during work.
- “Supervisors” (foreman, superintendents, team leads) are responsible for the safety of their employees and are required to enforce the safe work rules. To assure compliance supervisors will be held accountable for the conduct of the workers on their crew. The safety and health of workers must receive consideration throughout all phases of the work.
- The safety and health of each employee is the responsibility of the supervisor however, each employee is expected, as a condition of employment, to work in a manner which will not cause injuries to themselves or to others.
- Inspect your fall protection gear daily. Questionable gear shall be red tagged and taken out of service immediately.
- This project cannot be completed using conventional fall protection equipment therefore we will be utilizing an engineered system. The majority of the components are off –the-shelf fall protection equipment (harness, lanyard, carabiners, rope grabs) However the anchorage point (counter weight) and the vertical lifeline (rope length of ~250’) are unique to this application.
- The counter weight will be a self-propelled telescoping boom lift, Genie S-80. Per the specification sheet this unit weighs 35,400 pounds comfortably exceeding the required 10,000 pounds. (5,000 pounds per worker).
- The Genie S-80 will be parked in the proper position with the cylinders retracted to the trailer travel position. The unit will be locked out to prevent accidental operation. Each worker on the roof will have their own individual key to the lock out point. The unit cannot be powered up until all parties are on the ground and have released their individual lock.
- The actual anchorage point will be the lifting eyes in the base frame of the unit. Rope will be attached through the frame using the “Tension less anchor knot” identified on page 8 of the Rescue Knots handout. Carabiners will be used to attach the “Figure 8 on a bight” to the live side of the vertical life line. The dead side of the figure 8 on a bight will be dressed using a “Barrel knot”.
- Knots reduce the break strength of the rope due to the pinching forces applied. Break strength of the rope must be de-rated by the knots efficiency factor. Tensionless anchor knots have a loss efficiency of 0%, figure 8 on a bight has a efficiency loss of approximately 20 %, the barrel knot is a dressing knot on the dead end (no load, simply a safety knot to prevent slippage) of the rope thus it does not have an efficiency rating. The rope will be protected from sharp edges and anything that could cause the rope bend to exceed the 4:1 rule mentioned on page 1 of Rescue knots.
- The area around the aerial boom lift will be barricaded with ribbon or tape as well as signage to keep unauthorized people out of the work area. This includes the potential drop zone of materials, tools or debris. Care must be taken to effectively block golf carts, pedestrians, and vehicles from the work areas. Delineators with snow fence are likely the best approach. Traffic control or a flagger is an acceptable option.

- The vertical life line (rope) and the rope grabs are critical components to this system review the specification sheets for these products (DBI-Sala and Miller) Review the rope suppliers specification sheet.
- Rope grabs are sensitive to direction of travel and will only work when properly installed. Not all rope grabs are designed the same. Make certain to inspect each rope grab before you connect to it.
- The roof will need to be protected from potential damage by the rope as it crosses over the peak. Materials (carpet, rubber mat, plywood) shall be installed during the initial set up in each work location. The rope shall be restrained with tape or other means of tether to prevent the rope from disconnecting from the protection device. The ropes and protection devices will need to be repositioned several times during this project.
- Workers must stay 3 feet away from the peak to ensure they don't cross over putting themselves in a position of no protection. Workers shall kneel at the 3 foot mark as they approach the peak, when placing the roof protection. The reason for kneeling to ensure the workers can reach the peak with their hands but cannot walk or fall over the peak.
- Workers need to position themselves to limit a swing fall hazard. Generally speaking the workers must be aligned to 90 degrees of the base unit of the Genie S-80. When the workers position cannot be 90 degrees the work must stop. Workers are to report to the ground level to remove the lockout devices enabling the repositioning of the Genie S-80. Lockout devices must be reapplied once the unit is in the proper position.
- The rope shall be tossed across the roof, from the aerial boom lift, before it is moved to the anchor position. Crowd control during this operation is critical to prevent accidental contact with the loose rope.
- Workers will climb an extension ladder to reach the roof. Before the workers step off of the ladder they must be properly secured to the rope grab and vertical life line.
- Ladders must be backed (held by another worker during ascend or descend) or jacked (tethered to prevent accidental slips)
- Specifications review and confirmation: Rope, rope grabs, Genie S-80, knots.
- Knots: Watch video clips about figure 8 knots; review the handouts for tying knots, practice tying knots. Demonstrate that you can tie proper knots to the person conducting the fall protection orientation. Peer review each other's knots, quality assurance.
- Before work can start as second set of eyes needs to review and approve the installation of the engineered fall protection and ground control system. This person is typically an Unger Foreman.
- Rescue: Remember at no time can a worker be on the roof without fall protection. Rescue will be performed by a combination of the workers peer and the ground control person. The ground control person shall be wearing a harness and shall have a rope grab positioned at the base of the ladder to ensure rapid response.

**By signing below, I verify I understand how to inspect my harness, rope, rope grabs, anchorage points, knots, lanyards and carabineers. I've been instructed on the proper direction and placement of the rope grab and how to tie appropriate knots. I understand the proper method to lockout the Genie s-80. I understand the specifications for the components of the engineered system. I understand the expectations for moving the anchorage point to prevent a swing fall hazard. I understand the requirements for ground control and rescue operations.**

**Failure to comply will lead to disciplinary actions up to and including dismissal from the job site.**

Worker Signature: \_\_\_\_\_