



ENVIRONMENTAL HEALTH AND SAFETY

FALL PROTECTION PROGRAM MANUAL

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Status

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Table of Contents

Status	2
A: INTRODUCTION	4
B: ADMINISTRATIVE ROLES	4
C: PROCEDURAL REQUIREMENTS	5
D: EQUIPMENT SPECIFICS	6
E: TRAINING.....	8
F: CONTRACTORS	8
G: DUTIES OF AFFECTED PERSONNEL	9
H: EMERGENCY RESPONSE AND RESCUE	10
I: DIRECTORY.....	10
APPENDIX A: DEFINITIONS	10

A: INTRODUCTION

Oklahoma State University (OSU) is dedicated to the protection of its employees and contractors from on-the-job injuries. The purpose of this program manual is: (a) to supplement our standard safety policy by providing safety standards specifically designed to cover fall protection on the job and (b) to ensure that each employee and/or contractor is trained and made aware of the safety provisions that are to be implemented prior to the start of the job.

This program manual is designed to enable personnel at all levels to recognize fall hazards in their work sites. It can also assist in developing procedures designed to prevent falls to lower levels or through holes and openings in walking/working surfaces. Each employee and/or contractor must be trained in these procedures and should strictly adhere to them unless doing so would expose them to a greater hazard. If this is the case, the supervisor is to be notified of the concern and the concern must be addressed before proceeding.

B: ADMINISTRATIVE ROLES

ENVIRONMENTAL HEALTH AND SAFETY

The specific responsibility for developing and implementing OSU programs for health and safety resides with the Environmental Health and Safety (EHS) department. In fulfillment of this responsibility, EHS has prepared this Fall Protection Program Manual and assists other departments in the development and implementation of fall protection procedures for their areas.

FACILITIES MANAGEMENT

Facilities Management (FM) is a key partner in the successful and safe operations of all elevated work at OSU. FM managers and supervisors are responsible for ensuring their employees are properly trained to do the jobs they are assigned. This includes understanding how to identify potential slip, trip, and fall hazards on elevated and ground levels.

DEPARTMENTS

Each department is responsible for evaluating areas under its administrative control and determining the risks for falls from elevated work surfaces. Departments that identify such surfaces in their areas and/or job duties are responsible for the implementation of the components of this Fall Protection Program Manual.

MANAGERS AND SUPERVISORS

Managers and supervisors play a key role in the implementation of the Fall Protection Program Manual. They are responsible for: (a) determining whether personnel are at risk for falls from elevated surfaces; (b) identifying personnel who will be required to work from elevated surfaces as part of their duties; (c) ensuring that all personnel required to work from elevated surfaces are properly trained prior to assignment; (d) ensuring that the proper equipment required for safe work is made available to personnel; and (e) ensuring that all provisions of the program are followed.

PERSONNEL

Personnel are responsible for observing all practices and procedures contained in the Fall Protection Program Manual, other general safety practices, attending designated training sessions, and reporting hazardous or unsafe conditions to their supervisor or EHS. Employees designated as a Competent Person are responsible for additional duties, as outlined in Section G: Duties of Affected Employees.

PROGRAM REVIEW

EHS will review the Fall Protection Program Manual annually. Personal protective equipment (PPE) inspection records and EHS audits will be used to determine if revisions are needed to ensure employee safety. If revisions are needed, the changes shall be made, and affected employees will be trained on the revisions.

STANDARD OPERATING PROCEDURES

Standard operating procedures (SOP) describe the method(s) that will be used to complete a task or operation. Departments with fall hazards must develop SOPs and incorporate them into this manual to complete their departmental Fall Protection Plan. To make the program specific to their work areas, procedures must be developed by departments regarding the following items:

- Training of designated employees.
- Identification of areas and tasks that place personnel at risk for falls.
- Purchase, inspection, and care of fall protection PPE.
- Signage/placarding to warn personnel of the risk for falls.
- Process for replacement or repair of fall protection PPE.

RECORDKEEPING

As a part of the Fall Protection Program, the following records must be maintained by each department:

- A list of areas and tasks which place personnel at risk for falls.
- Purchase records of all Fall Protection PPE.
- Inspection records of all Fall Protection PPE.
- Records indicating the disposal of PPE following a fall and/or inspection failure.
- Training of affected personnel.

HAZARD EVALUATION

When assessing fall hazards, the supervisor or competent person should **first** determine if the hazard can be eliminated. When the hazard cannot be eliminated, determine how the hazard can be reduced or controlled.

- **Job Hazard Analysis (JHA):** Conduct a JHA to identify hazards in the workplace and methods to reduce risk.
- **Fall Hazard Elimination:** All fall hazards should first be eliminated if possible. This will require an assessment of the workplace.
- **Reduction of Fall Hazards:** When hazards cannot be eliminated, techniques to reduce hazards will be utilized. Examples of reducing fall hazards include use of passive fall protection systems such as stairs, guardrails, or steady work platforms such as aerial lifts.
- **Control of Fall Hazards:** Control of fall hazards should only be utilized after it has been determined that the fall hazard cannot be controlled by elimination or reduction. Fall hazard control is accomplished by using fall protection devices that control or limit the fall distance or forces associated with a fall. This equipment may include full body harnesses, lanyards, fall arrest systems, lifelines, and anchorage points.

C: PROCEDURAL REQUIREMENTS

Remember the following, when fall hazards are present:

- Keep walking and working surfaces clean, dry, and free of items that can become a trip hazard.
- Wear a personal fall arrest system when working at a dangerous height (4 feet or higher) unless protected by an approved guardrail system or safety net system.
 - *A worker is considered to be at a dangerous height or elevated level when exposed to a fall of 4 feet (1.2 meters) or more to a lower or ground level and exposed at any height above dangerous machinery, equipment or other potential hazards.*

- Components of the personal fall arrest systems are to be used only for employee protection and not to hoist materials.
- Clean up spills and slip hazards immediately.
- Install standard railing that meets regulatory agency requirements.
- Wear shoes or boots with slip-resistant soles that protect from oils, acids, and caustics.
- Keep walkways free of items that constitute a trip hazard such as tools, parts, debris, electrical cords, or objects that can protrude into walkways.
- Open holes must be barricaded or covered; this includes skylights.
- Use caution when walking on uneven surfaces.
- When objects are necessary in walkways (example: air hose), the area must be clearly marked as a potential hazard and items secured to the ground with tape or other means.
- Construct elevated walking and working surfaces with engineering controls that provide fall protection and meet regulatory requirements.
- Scaffolds must be constructed according to manufacturer and regulatory requirements and erected by trained, qualified personnel.
- Do not carry equipment, parts, or bulky items while climbing stairs, ladders, or scaffolds.
- Scaffolding must be erected on solid, level ground.
- Scaffolding inspections are to be performed daily, by a competent person.
- Employees on a scaffold more than 10 feet above a lower level shall be protected from falling to a lower level.
- All ladders must be inspected prior to use, and any ladder or scaffold found to have defects must be taken out of service. The defected item should be labeled “OUT OF SERVICE” and tagged with the hazard(s) present. *Ladders with defects that cannot be repaired are to be destroyed and discarded.*
- Working platforms should have top rails, mid rails, and toe boards on all open sides.
- Workers must use a personal fall arrest system when there is no guardrail or when there is an opening of 18 inches in the working platform’s guardrail.
- When climbing a ladder, use the “3 Point Rule” that keeps at least two hands and one foot, or two feet and one hand on the ladder at all times.
- Do not climb on the top two rungs or steps of a ladder.
- When employees are exposed to falling objects, head protection is required. In addition, toe boards, screens, or guardrail systems shall be erected to prevent objects from falling to a lower level. The area into which objects could fall must be barricaded to prevent employees from entering. Keep objects far enough away from the edge or opening to prevent them from falling to a lower level.

D: EQUIPMENT SPECIFICS

NON-CONSTRUCTION WORK ACTIVITIES

For all non-construction work activities, personnel will comply with the fall protection requirements as stated in this section:

- Workers must utilize a personal fall arrest system to prevent injury when working at dangerous heights (4 feet or higher).
- Prior to each use, workers must inspect the harness and lanyard for cuts, loose hardware, frayed strands, burns, chemical damage, excessive wear, and other defects.
- Inspection and replacement requirements will be in accordance with the manufacturer’s recommendations.

Within 6 Feet: When work must be performed within 6 feet of an unprotected edge, personnel must be protected by a guardrail system, travel restraint system, or a personal fall arrest system.

6 Feet to 15 Feet: Designated areas are permitted by the Occupational Safety and Health Administration (OSHA) when work is being performed on a low-sloped or flat roof, the work is greater than 6 feet from the unprotected edge and is both infrequent and temporary.

- Designated areas may only be set up and used by trained personnel. Fall protection training is required.
- When a designated area is being used, the following requirements apply:
 - Employees must remain within the designated area while work operations are underway.
 - The perimeter of the designated area must be delineated with a warning line.
 - Warning lines should consist of rope, wire, tape, or chains as per OSHA standards.
- When mobile mechanical equipment is used to perform work that is both temporary and infrequent in a designated area, the warning line must not be erected less than 6 feet from the unprotected edge parallel to the direction the equipment is operated, nor less than 10 feet from the unprotected edge perpendicular to the direction of travel.

15 Feet or More: When work is performed 15 feet or more from the roof edge, and the work is both infrequent and temporary, fall protection is not required provided that a work rule has been implemented and enforced. The work rule prohibits personnel from going within 15 feet of the roof edge without the use of a fall protection system (i.e. guardrail system, safety net system, travel restraint system, or a personal fall arrest system).

Utilize the Fall Protection Self-Inspection Checklist to ensure the jobsite meets required regulations.

CONSTRUCTION WORK ACTIVITIES

For all construction activities on OSU premises, all employees will comply with the fall protection requirements as stated in this section:

- When workers are potentially exposed to falls from heights of **6 feet (1.8 meters)** or greater, a competent person for the specific worksite must prepare a fall protection plan.
- When adequate tie off locations are provided, the fall protection plan will require workers to wear a personal fall arrest system.

Personal Fall Arrest System Requirements include:

- A harness and lanyard are not required on portable ladders.
- Prior to each use, workers must inspect the harness and lanyard for cuts, loose hardware, frayed strands, burns, chemical damage, excessive wear and other damage.
- The manufacturer's inspection and replacement requirements are to be followed.
- Equipment or raw materials purchased for use in a fall protection system must meet applicable American National Standard Institute (ANSI) and ASTM International standards.
- The fall protection plan must identify each location where conventional fall protection methods cannot be used.
- Where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical, safety nets shall be provided when workplaces are more than 25 feet above the ground, water, or other surface. The following requirements must be met:
 - Operations shall not be undertaken until the net is in place and tested.
 - Nets shall extend 8 feet beyond the work surface and shall be installed as close under the work surface as practical but never more than 25 feet below the work surface.
 - The mesh size of nets shall not exceed 6 inches by 6 inches. All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers and shall bear a label of proof test. Edge ropes shall provide a minimum breakage strength of 5,000 pounds.
- Where no other alternative protective measure has been implemented, a safety monitoring system is required. On low slope roofs (slope of 4:12 or less) and roofs 50 feet or less in width, a safety monitoring system may be used with the following requirements:
 - A competent person will be designated to monitor the safety of other workers.
 - The safety monitor will warn the worker(s) when it appears that they are unaware of a fall hazard or

are acting in an unsafe manner.

- The safety monitor will be close enough to communicate orally with the worker(s).
- The safety monitor will have no other responsibilities that could take the monitor's attention from the monitoring function.
- The fall protection plan will state the names and method for identification of each worker who is designated to work in the controlled access zones. No other personnel may enter the controlled access zones.
- The fall protection plan must include emergency contact information of emergency services, which may provide life saving care, in the event of a fall.

Utilize the Fall Protection Self-Inspection Checklist to ensure the jobsite meets required regulations.

E: TRAINING

GENERAL AWARENESS TRAINING

Workers who may be exposed to slip, trip, and fall hazards must attend training initially and annually, thereafter. This training will help employees recognize fall hazards and learn about the appropriate hazard control techniques. Such training is provided by the EHS department upon request. Training must be documented, and records must be maintained in accordance with OSU's retention schedule.

FALL PROTECTION TRAINING

Those who work at elevated heights or have the potential to be exposed to associated hazards of work at elevated heights must attend training upon initial assignment and annually, thereafter. Retraining is required when:

- Deficiencies in training have been identified.
- Workplace changes take place (i.e. new hazards require new information).
- Fall protection systems or equipment changes render previous training obsolete.

Training regarding potential hazards associated with working at elevated heights will be taught by qualified, competent persons. Training will consist of:

- Potential hazards (fall, electrical, falling objects, machinery).
- Fall protection system care, inspection, and use.
- Minimizing the hazards.
- Load capacities of equipment.
- Choosing the correct fall protection system.
- Additionally, supplemental training regarding the safe operation of any equipment, such as aerial lifts, may be needed before the equipment is utilized.

F: CONTRACTORS

Contractors working at heights while at OSU must be familiar with and follow any applicable OSHA guidelines as well as the contractor-specific items listed below:

- Contractors must be informed of the OSU Fall Protection Program Manual and its requirements, know fall hazards or potential fall hazards, recommended fall protection equipment needed for the job task, and times when OSU personnel may work alongside or near the contract personnel.
- Contractors must provide their worker(s) with necessary equipment for completion of the job.
- Contractors must show current evidence of training all affected personnel in the hazards of falling from heights, proper use of fall protection equipment, as well as hands-on training and practice of rescue/recovery of a fallen worker.

Contractors who fail to provide the above requirements are at risk for delay of operations and work stoppage due to the potential for unsafe working conditions. OSU reserves the right to discontinue projects being performed by contractors who demonstrate a willingness to cut corners and fail to provide workers with necessary life-safety equipment and training.

G: DUTIES OF AFFECTED PERSONNEL

The **Employer** is to instruct each employee in the recognition of fall hazards and how such hazards are to be avoided or controlled. The responsibility of providing any and all equipment necessary to safely perform the work also lies with the employer.

The **Fall Protection Worker** (employee) has a responsibility to participate in training over the procedures that the employer has established for the use of the fall protection control measures and to follow all instructions given in such training. Additionally, workers will be responsible for complying with the OSU Fall Protection Program and conducting tasks in a safe manner.

The **Competent Person** is responsible for recognizing fall hazards, assessing workplaces to ensure the proper implementation of the fall protection program, and correcting any unsafe conditions. All training is to be conducted by a Competent Person designated by the employer. The Competent Person must be qualified in these areas:

- Knowledgeable of the nature of fall hazards in the work area or site.
- Knows the correct procedures for erecting or assembling the fall protection systems that will be used on site. They must know the procedures for the maintenance of these systems and the procedures for disassembling the fall protection systems.
- Knows the proper procedures and methods to fully inspect the fall protection systems used on the work site.
- Knows the proper applications for the conventional fall protection systems and the non-conventional fall protection systems.
- Knows the role of each employee in using fall protection systems including the safety monitor non-conventional system if this system is used on site.
- Knowledgeable of the limitations of mechanical equipment that may be used on the roof job within the protected areas of fall protection, non-conventional system.
- Knowledgeable of the correct procedures for handling and storing of fall protection equipment.
- Knowledgeable of the proper procedures for the storage of materials and equipment to prevent them from becoming a hazard to those working below, and where the erection of overhead protection is needed.
- Knows the role of employees and the fall protection precautions that need to be taken in any fall protection plan that may be developed for a site.
- Knowledgeable of the OSHA 1910 fall protection standards in Subparts D and I.
- Knowledgeable of the OSHA 1926 fall protection standards in Subparts L, M, and R.
- Knows the training certification procedures that the employer is using for documenting the training that has been given to employees related to fall protection.
- Knowledgeable of the employer's policy on the recognition of other training sources, which is training that could be accepted as a substitute for the fall protection training given by the employer.
- Knowledgeable of when retraining is needed for employees that have been previously trained.
- Knowledgeable of the rescue capabilities of the employer and nearby emergency services to rescue a person that is hanging by their personal fall arrest system.

The **Supervisor** (or manager) must ensure that all affected workers are trained appropriately, in accordance with this Fall Protection Program Manual and applicable regulatory standards. The supervisor (or manager) must also

ensure that affected personnel have the necessary fall protection equipment and that it is being maintained and utilized in the proper manner.

The **Qualified Person** will evaluate the workplace, tasks being performed, and hazards associated with them. Then, they will design a complete fall arrest system based on the information derived from this evaluation.

H: EMERGENCY RESPONSE AND RESCUE

In the event that a fallen worker cannot perform self-rescue or trained personnel are unable to safely rescue the fallen worker, emergency services will be called. Oklahoma State University will rely on rescue personnel from the City of Stillwater Fire Department in such an event. Additionally, emergency medical services may be necessary, therefore an ambulance will be requested for treatment of the fallen worker.

I: DIRECTORY

Environmental Health and Safety

University Health Services Suite 002 / (405) 744-7241

University Health Services

1202 West Farm Road / (405) 744-7665

Facilities Management

402 North Willis / (405) 744-7154

Stillwater, Oklahoma

Emergency - Ambulance, Fire, Police (911)

APPENDIX A: DEFINITIONS

- **Anchorage:** A secure point of attachment for lifelines, lanyards, or deceleration devices.
- **Arresting Force:** Force needed to stop the worker from falling. The greater the free fall distance, the more force needed to arrest the fall. Deceleration devices absorb and dissipate much of the force needed to stop the fall. A full body harness distributes the force throughout the body.
- **Authorized:** refers to an employee who the employer assigns to perform a specific type of duty, or an employee that is allowed in a specific location or area.
- **Competent Person:** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. [29 CFR 1926.32(f)]. By way of training and/or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation and has authority to correct them. Some standards add additional specific requirements which must be met by the competent person.
- **Deceleration Distance:** Distance it takes after any free fall before the worker comes to a stop after the personal fall arrest system activates. Deceleration distance for a fall arrest system must not exceed 3.5 feet. Examples of deceleration devices include shock absorbing lanyards and self-retracting lifelines.
- **Free Fall:** Act of falling before the personal fall arrest system begins to apply a deceleration force to stop the fall. Free fall distance must not exceed 6 feet. However, for self-retractable lifelines or ladder climbing devices, the system must begin to stop the fall within 2 feet or less.

- **Job Hazard Analysis (JHA):** Establishing proper safe job procedures by studying and recording each step of each job; identifying existing or potential hazards; and determining the best way to perform the job to reduce or eliminate these hazards.
- **Personal Fall Arrest System:** A system used to arrest an employee in a fall from a walking-working surface. Fall arrest system PPE includes a full body harness, shock-absorbing lanyard, and an anchor point.
- **Positioning Device System:** A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall. The employee should be able to work with both hands free while leaning.
- **Qualified Person:** One who has a recognized degree, certificate, or professional standing; or who by extensive knowledge, training and experience has successfully demonstrated their ability to solve or resolve problems related to the subject matter, work, or project; one who is qualified to design a fall arrest system.
- **Railing:** A standard railing is a vertical barrier erected along exposed edges of floor openings, wall openings, ramps, platforms, and runways to prevent falls of persons.
- **Walking/Working Surface:** Any surface, whether horizontal or vertical, an employee walks or works on. This includes, but is not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel. This does not include ladders, vehicles, or trailers that employees must be located on to perform their job duties.
- **Work Level Platform:** The elevated platform used for supporting workers and their materials that comprises the necessary vertical, horizontal, and diagonal braces, guardrails, and ladder for access to the work.