Fall Protection Plan—Construction

Tips and Considerations

**Applicability.** This sample fall protection plan applies to construction site activities and employee training related to walking and working surfaces near unprotected sides and edges that are 6 ft or more above a lower level, and to protection from falling objects (29 CFR 1926.500 to 1926.503). A site-specific Fall Protection Plan is required for employers engaged in leading edge work, precast concrete erection work, or residential construction work that can demonstrate that it is infeasible or creates a greater hazard to use conventional fall protection systems.

It does not apply to ladders, stairs, scaffolding, aerial lifts, towers, steel erection, cranes, derricks, tunneling, telecommunication, tanks, electric power transmission or distribution, hoists, elevators, conveyors, or excavations, which are covered under other general industry and construction rules.

There are other OSHA rules related to fall protection that may apply to your work sites:

* 29 CFR 1910.22 and 1910.30—Walking-Working Surfaces (guarding floor and wall openings and holes, and training requirements)
* 29 CFR 1910.66—Powered platforms for building maintenance, personal fall arrest system (1910.66 Appendix C, Sec. I, mandatory)
* 29 CFR 1910.132—Personal Protective Equipment
* 29 CFR 1910.140—Personal Fall Protection Systems
* 29 CFR 1910.269—Electric power generation, transmission, and distribution
* 29 CFR 1926.104 and 1926.105—Safety belts, lifelines, lanyards, and safety nets
* 29 CFR 1926.450 to 1926 Subpart L Appendix E—Scaffolds
* 29 CFR 1926.651—Specific excavation requirements
* 29 CFR 1926.753 and 1926.760—Steel Erection (hoisting and rigging, and fall protection)
* 29 CFR 1926.800—Underground construction
* 29 CFR 1926.1050 to 1926 Subpart X Appendix A—Stairways and Ladders

**Basic fall protection plan components.** The Fall Protection Plan must be prepared by a qualified person and developed specifically for the site where leading edge work, precast concrete work, or residential construction work is being performed. The plan must be kept up to date, and any changes to the plan must be approved by a qualified person. A copy of the plan must be maintained at the worksite, and implementation must be under the supervision of a competent person. The plan must include:

* The reasons why the use of conventional fall protection systems (e.g., guardrail systems, personal fall arrest systems, or safety nets systems) are infeasible or why their use would create a greater hazard.
* A written discussion of the measures that will be taken to reduce or eliminate fall hazards for workers.
* Identification of each location where conventional fall protection methods cannot be used.
* A statement that provides the name or other method of identification for each employee who is designated to work in controlled access zones.

If an employee falls, or some other related, serious incident occurs, the employer must investigate the circumstances of the fall or incident to determine if the fall protection plan needs to be changed and shall implement those changes to prevent similar types of falls or incidents.

**How to use this plan.** The following Fall Protection Plan is a template with sample language prepared for the prevention of injuries associated with falls. A Fall Protection Plan must be developed on a site-by-site basis. Builders should discuss the written Fall Protection Plan with their OSHA Area Office or state regulatory agency before going on a jobsite.

**Review and incorporation of state regulatory requirements.** This plan is based on federal requirements and/or best practices. Some states have laws and regulations that are stricter than federal requirements and may impact how you customize this plan. After reviewing the specific information for your state(s), you can edit the plan accordingly.

**[Company Name] [Insert Company Logo]**

Fall Protection Plan

**Regulation:** 29 CFR 1926.502 **[replace with the state regulation if applicable]**

**Scope:** All employees engaged in leading edge work, precast concrete erection work, or residential construction work where it has been determined that it is infeasible or creates a greater hazard to use conventional fall protection systems. Conventional fall protection systems include guardrail systems, safety net systems, and personal fall arrest systems.

This Fall Protection Plan is specific for the following project:

Job Location: **[Location]**

Plan last prepared or modified: **[date]**

Prepared by: **[Name and title]**

 **[company name]**

Approved by: **[Name and title]**

 **[company name]**

Supervised by: **[Name and title]**

 **[company name]**

Program Administration

Table **[number]** provides contact information for the administration of the Fall Protection Plan (“Plan”).

n **Table [number]— Program Contact Information**

**[Modify the list as applicable to your organization]**

|  |  |  |
| --- | --- | --- |
| Task | Name, job title, and/or department | Phone |
| Qualified Person | **[Name]** | Work:Mobile:  |
| Competent Person |  | Work:Mobile: |
| Supervisor(s) |  | Work:Mobile: |
|  |  | Work:Mobile: |
|  |  |  |
|  |  |  |

**Qualified person responsibilities.** **[Name]** must prepare and maintain this Plan and approve any changes to it.

**Competent person responsibilities.** It is the responsibility of the competent person, **[name]**, to implement this Plan. The competent person is responsible for continual safety checks of work operations and enforces the safety policy and procedures.

**Supervisor responsibilities.** The supervisor, or foreman, also is responsible to correct any unsafe acts or conditions immediately.

**Employee responsibilities.** It is the responsibility of the employee to understand and adhere to the procedures of this Plan and to follow the instructions of the supervisor or foreman. It is also the responsibility of the employee to bring to management’s attention any unsafe or hazardous conditions or acts that may cause injury to either himself/herself or any other employees.

Definitions

*Anchorage*—secure point of attachment for lifelines, lanyards, or deceleration devices.

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

*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.

*Controlled access zone*—an area in which certain work may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.

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

*Guardrail system*—barrier erected to prevent employees from falling to lower levels.

*Hole*—a gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.

*Infeasible*—impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.

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

*Lifeline*—a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

*Personal fall arrest system*—system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or 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.

*Positioning device system*—a body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

*Qualified person*—one who, by possession of a recognized degree, certificate, or professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

*Safety-monitoring system*—safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

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

*Snaphook*—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.

*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 guardrail system at least 39 inches (1.0 m) high.

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

*Warning line system*—a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body harness, or safety net systems to protect employees in the area.

Policy Statement and Purpose of the Plan

It is the policy of **[Company name]** to protect its employees from on-the-job injuries. All employees have the responsibility to work safely on the job. The purpose of this Plan is to:

* Supplement our standard safety program by providing safety standards specifically designed to cover fall protection on this job; and
* Ensure that each employee is trained to recognize workplace fall hazards and take the appropriate measures to address these hazards.

This Plan addresses the use of conventional fall protection at a number of areas on the project and addresses specific activities that require non-conventional means of fall protection. These areas include **[Modify this list to cover site-specific activities.]**:

* Connecting activity (point of erection)
* Leading edge work
* Unprotected sides or edge
* Grouting
* Setting and bracing of roof trusses and rafters
* Installation of floor sheathing and joists
* Roof sheathing operations
* Erecting exterior walls

This plan is designed to enable employers and employees to recognize the fall hazards on this project and to establish the procedures that are to be followed in order to prevent falls to lower levels or through holes and openings in walking/working surfaces. Each employee is trained in these procedures and strictly adheres to them except when doing so would expose the employee to a greater hazard. If an employee determines there is a greater hazard, the employee must notify **[name or job title]** of the concern and the concern must be addressed before continuing work.

A copy of this plan with all approved changes will be maintained at the job site.

Controlled Access Zones

When using this Plan to implement the fall protection options available, workers must be protected through limited access to high hazard locations. Before any nonconventional fall protection systems are used as part of the work plan where conventional fall protection methods cannot be used, a controlled access zone will be clearly defined by the competent person as an area where a recognized hazard exists. The demarcation of controlled access zones will be communicated by the competent person in a recognized manner, either through signs, wires, tapes, ropes, or chains.

When control lines are used, they will be erected at least 6 feet (1.8 m) and no more than 25 feet (7.7 m) from the unprotected or leading edge, except when erecting precast concrete members. When erecting precast concrete members, the control line will be erected at least 6 feet (1.8 m) and no more than 60 feet (18 m) or half the length of the member being erected, whichever is less, from the leading edge.

The control line will extend along the entire length of the unprotected or leading edge and will be approximately parallel to the unprotected or leading edge. The control line will be connected on each side to a guardrail system or wall.

When used to control access to areas where overhand bricklaying and related work are taking place, the controlled access zone will be defined by a control line erected at least 10 feet (3.1 m) and no more than 15 feet (4.5 m) from the working edge. The control line will enclose all employees performing overhand bricklaying and related work at the working edge and will be approximately parallel to the working edge. Additional control lines will be erected at each end to enclose the controlled access zone.

Each control line will be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material. Each line will be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m) [or 50 inches (1.3 m) when overhand bricklaying operations are being performed] from the walking/working surface. Each line will have a minimum breaking strength of 200 pounds.

All access to the controlled access zones will be restricted to authorized entrants and the competent person **[name]** will ensure that all protective elements of the controlled access zones will be implemented before the beginning of work.

The controlled access zones where conventional fall protection cannot be used at this site are:

* **[Location]**
* **[Location]**
* **[Location]**

Table **[number]** identifies the employees designated to work in controlled access zones.

n **Table [number]— Controlled Access Zone Workers**

|  |  |
| --- | --- |
| Controlled Access Zone | Employee name, job title, and/or department |
| [Location] | [Name] |
| [Location] | [Name] |
| [Location] | [Name] |
|  |  |
|  |  |
|  |  |

Fall Protection Systems to Be Used on This Project

[*Describe the conventional fall protection methods used at the site, if any. Describe the measures that will be taken to reduce or eliminate fall hazards for workers who cannot be provided with protection from conventional fall protection systems and identify the specific activities that require the nonconventional means of fall protection.* *You may include/modify following examples as they apply to your worksite and/or create your own descriptions*.]

**Warning line systems.** Warning line systems consist of ropes, wires, or chains, and supporting stanchions that form a barrier to warn employees they are near an unprotected roof side or edge. Warning line systems will be used to mark off an area within which employees may do roofing work without using guardrails or safety nets. They will be set up as follows:

* Flagged at not more than 6-foot intervals with high-visibility material
* Rigged and supported so that the lowest point including sag is no less than 34 inches and its highest point is no more than 39 inches from the walking/working surface
* Stanchions will not tip over when a horizontal force of 16 pounds is applied 30 inches above the walking/working surface
* The rope, wire, or chain will have a minimum tensile strength of 500 pounds and will support the load applied to the stanchions as prescribed above
* The warning line will be attached to each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in the adjacent section before the stanchion tips over.

Warning lines will be erected around all sides of roof work areas. When mechanical equipment is being used, the warning line will be erected not less than 6 feet from the roof edge parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge perpendicular to the direction of mechanical equipment operation. When mechanical equipment is not being used, the warning line will be erected not less than 6 feet from the roof edge.

**Safety monitoring system.** A safety monitoring system means a fall protection system in which a competent person is responsible for recognizing and warning employees of fall hazards. Safety monitoring systems will be used in areas where no other alternative measure has been implemented. The duties of the safety monitor are to:

* Be competent in recognizing fall hazards.
* Warn workers when they appear to be unaware of a fall hazard or are acting in an unsafe manner.
* Be on the same walking/working surface and within visual sighting distance of the monitored employees.
* Be close enough to communicate orally with the workers.
* Not have other responsibilities that could take the monitor’s attention from the monitoring function.

Mechanical equipment will not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-slope roofs.

No employee, other than an employee covered by this fall protection plan, will be allowed in an area where an employee is being protected by a safety monitoring system.

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

*[The following example would apply to precast concrete erection work.]*

**Holes.** All openings greater than 12 inches by 12 inches will have perimeter guarding or covering. All predetermined holes will have the plywood covers made in the precasters' yard and shipped with the member to the jobsite. Prior to cutting holes on the job, proper protection for the hole must be provided to protect the workers. Perimeter guarding or covers will not be removed without the approval of the erection foreman.

Precast concrete column erection through the existing deck requires that many holes be provided through this deck. These will be covered and protected. Except for the opening being currently used to erect a column, all opening protection will be left undisturbed. The opening being uncovered to erect a column will become part of the point of erection and will be addressed as part of this Fall Protection Plan. This uncovering is to be done at the erection foreman's direction and will only occur immediately prior to "feeding" the column through the opening. Once the end of the column is through the slab opening, there will no longer exist a fall hazard at this location.

*[The following example would apply to* *residential construction work.]*

**Installation of roof trusses/rafters.** On all walls of 8 feet or less, workers will install interior scaffolds along the interior wall below the location where the trusses/rafters will be erected. In structures that have walls higher than 8 feet and where the use of scaffolds and ladders will create a greater hazard, safe working procedures will be used when working on the top plate and will be monitored by the crew supervisor. During all stages of truss/rafter erection, the stability of the trusses/rafters will be ensured at all times.

**[Company name]** will take the following steps to protect workers exposed to fall hazards while working from the top plate installing trusses/rafters:

* Only the following trained workers will be allowed to work on the top plate during roof truss or rafter installation:
	+ **[Name]**
	+ **[Name]**
	+ **[Name]**
* Workers will have no other duties to perform during truss/rafter installation.
* All trusses/rafters will be adequately braced before any worker can use the truss/rafter as a support.
* Workers will remain on the top plate using the previously stabilized truss/rafter as a support while other trusses/rafters are being installed.
* Workers will leave the area of the secured trusses only when it is necessary to secure another truss/rafter.
* The first two trusses/rafters will be set from ladders leaning on side walls at points where the walls can support the weight of the ladder.
* A worker will climb onto the interior top plate via a ladder to secure the peaks of the first two trusses/rafters being set.

Conventional Fall Protection Considered for this Project

[*Describe the conventional fall protection methods that were considered for this project and the reasons that their use was considered infeasible or that they would create a greater hazard. You may include/modify following examples as they apply to your worksite and/or create your own descriptions*.]

[*The following example would apply to precast concrete erection work.*]

**Safety net systems.** The nature of this particular precast concrete erection worksite precludes the safe use of safety nets where point of erection or leading edge work must take place.

1. **Rigging attachment problems.** To install safety nets in the interior high bay of the single story portion of the building poses rigging attachment problems. Structural members do not exist to which supporting devices for nets can be attached in the area where protection is required. As the erection operation advances, the location of point of erection or leading edge work changes constantly as each member is attached to the structure. Due to this constant change it is infeasible to set net sections and build separate structures to support the nets.

2. **Temporary safety net installations are impractical.** The nature of the erection process for the precast concrete members is such that an installed net would protect workers as they position and secure only one structural member. After each member is stabilized the net would have to be moved to a new location (this could mean a move of 8 to 10 ft or the possibility of a move to a different level or area of the structure) to protect workers placing the next piece in the construction sequence. The result would be the installation and dismantling of safety nets repeatedly throughout the normal workday. As the time necessary to install a net, test, and remove it is significantly greater than the time necessary to position and secure a precast concrete member, the exposure time for the worker installing the safety net would be far longer than for the workers whom the net is intended to protect. The time exposure repeats itself each time the nets and supporting hardware must be moved laterally or upward to provide protection at the point of erection or leading edge.

3. **Point of erection constantly changes.** Strict interpretation of 29 CFR 1926.502(c) requires that operations must not be undertaken until the net is in place and has been tested. With the point of erection constantly changing, the time necessary to install and test a safety net significantly exceeds the time necessary to position and secure the concrete member.

4. **Attachment point removal creates increased exposure to falls.** Use of safety nets on exposed perimeter wall openings and open-sided floors causes attachment points to be left in architectural concrete which must be patched and filled with matching material after the net supporting hardware is removed. In order to patch these openings, additional numbers of employees must be suspended by swing stages, boatswain chairs, or other devices, thereby increasing the amount of fall exposure time to employees.

5. **Net entanglement with members causes a high risk.** Installed safety nets pose an additional hazard at the perimeter of the erected structure where limited space is available in which members can be turned after being lifted from the ground by the crane. There would be a high probability that the member being lifted could become entangled in net hardware, cables, etc.

6. **Nets cause obstruction to wall panel installation.** The use of safety nets where structural wall panels are being erected would prevent movement of panels to the point of installation. To be effective, nets would necessarily have to provide protection across the area where structural supporting wall panels would be set and plumbed before roof units could be placed.

7. **Nets create obstruction for safe crane operation.** Use of a tower crane for the erection of the high rise portion of the structure poses a particular hazard in that the crane operator cannot see nor judge the proximity of the load in relation to the structure or nets. If the signaler is looking through nets and supporting structural devices while giving instructions to the crane operator, it is not possible to judge precise relationships between the load and the structure itself or to nets and supporting structural devices. This could cause the load to become entangled in the net or to hit the structure causing potential damage.

[*The following example would apply to* *residential construction work.*]

**Conventional fall protection methods considered for roof truss and rafter erection.** During the erection and bracing of roof trusses/rafters, conventional fall protection would present a greater hazard to workers. On this job, safety nets, guardrails and personal fall arrest systems will not provide adequate fall protection because the nets will cause the walls to collapse, and there are no suitable attachment or anchorage points for guardrails or personal fall arrest systems.

On this job, requiring workers to use a ladder for the entire installation process will cause a greater hazard because the worker must stand on the ladder with his back or side to the front of the ladder. While erecting the truss or rafter, the worker will need both hands to maneuver the truss and therefore cannot hold onto the ladder. In addition, ladders cannot be adequately protected from movement while trusses are being maneuvered into place. Many workers would experience additional fatigue because of the increase in overhead work with heavy materials, which can also lead to a greater hazard.

Exterior scaffolds cannot be utilized on this job because the ground, after recent backfilling, cannot support the scaffolding. In most cases, the erection and dismantling of the scaffold would expose workers to a greater fall hazard than erection of the trusses/rafters.

Other Fall Protection Measures Considered for This Job

The following is a list and explanation of other fall protection measures available and an explanation of limitations for use on this particular jobsite. If, during the course of this project, an employee sees an area that could be worked on more safely with the use of these fall protection measures, **[name]** should be notified.

[*The following subsections are examples that you may include/modify as they apply to your worksite. You may create your own descriptions.*]

## Scaffolds

Scaffolds are not used because:

1. The leading edge of the building is constantly changing and the scaffolding would have to be moved at very frequent intervals. Employees erecting and dismantling the scaffolding would be exposed to fall hazards for a greater length of time than they would by merely erecting the precast concrete member.
2. A scaffold tower could interfere with the safe swinging of a load by the crane.
3. Power lines, terrain, and site do not allow for the safe use of scaffolding.

## Vehicle Mounted Platforms

Vehicle mounted platforms are not used because:

1. A vehicle mounted platform will not reach areas on the deck that are erected over other levels.
2. The leading edge of the building is usually over a lower level of the building and this lower level will not support the weight of a vehicle mounted platform.
3. A vehicle mounted platform could interfere with the safe swinging of a load by the crane, either by the crane swinging the load over or into the equipment.
4. Power lines and surrounding site work do not allow for the safe use of a vehicle mounted platform.

## Crane-Suspended Personnel Platforms

Crane suspended personnel platforms are not used because:

1. A second crane close enough to suspend any employee in the working and erecting area could interfere with the safe swinging of a load by the crane hoisting the product to be erected.
2. Power lines and surrounding site work do not allow for the safe use of a second crane on the job.

Enforcement

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The crew supervisor or foreman, as well as individuals in the Safety and Personnel Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this plan.

Accident Investigations

All accidents that result in injury to workers, regardless of their nature, will be investigated and reported. It is an integral part of any safety program that documentation takes place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence.

In the event that an employee falls or there is some other related, serious incident occurring, this plan will be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

Changes to Plan

Any changes to the plan will be approved by **[name of qualified person]**. This plan will be reviewed by **[name of qualified person]** as the job progresses to determine if additional practices, procedures, or training needs to be implemented by **[name of competent person]** to improve or provide additional fall protection. Workers will be notified and trained, if necessary, in the new procedures. A copy of this plan and all approved changes will be maintained at the jobsite.