

Section 22
Brieser
Construction
SH&E
Manual

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This Fall Protection Plan has been prepared for the prevention of injuries associated with falls on job sites. It has been designed according to components established by the Occupation Safety and Health Administration (OSHA) in 29 CFR 1926, Subpart M, Fall Protection.

Fall
Protection

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FALL PROTECTION PROGRAM

Brieser Construction

Purpose

This Fall Protection Plan has been prepared for the prevention of injuries associated with falls on job sites. It has been designed according to components established by the Occupation Safety and Health Administration (OSHA) in 29 CFR 1926, Subpart M, *Fall Protection*.

While this plan provides the generic components and parameters for fall protection, it is understood that fall protection must be project-specific, where control measures must be developed and implemented for each identified project and/or job function. In many cases, the fall protection controls are unique to that project and/or job function. A qualified person for the specified work site must prepare each fall protection plan.

Brieser Construction is dedicated to the protection of its employees from on the job injuries. All employees of Brieser Construction have the responsibility to work safely on the job. The purpose of this plan is to:

- Supplement our standard safety policy by providing safety standards specifically designed to cover fall protection on this job.
- Ensure that each employee is trained and made aware of the safety provisions, which are to be implemented by this plan prior to the start of erection.

Definitions

Anchorage. The terminating component of a fall protection system or rescue system that is intended to support any forces applied to the system. *An anchorage meeting the requirements of this standard can safely withstand the foreseeable forces that might be exerted on the fall protection or rescue system. Care must be taken to distinguish between an anchorage and an anchorage connector as those terms are used in this standard. An anchorage is typically a fixed structural member required for the stability and other purposes of the structure itself. Examples include a beam, girder, column or floor. An anchorage connector, on the other hand, is a component that provides an interface to which the fall protection or rescue subsystem may be attached when the anchorage itself does not have a compatible connection point.*

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Body Belt or Safety Belt - a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline or deceleration device. Note: *As of January 1, 1998, the use of a body belt for fall arrest is prohibited.* A body belt is sometimes referred to as a waist belt or safety belt. Body belts are not suitable for fall arrest and therefore shall be rigged such that a user cannot free fall more than two feet (.9m). Body belts are not intended for use as a body support in the arrest of a worker's fall.

Body Support- An assembly of webbing arranged to support the human body for fall protection purposes, including during and after fall arrest. *The term "body support" is generally used to refer to a full body harness, chest harness, chest waist harness, or a body belt. It generally includes adjustable means for fastening it about the body and attachment points suitable for fall protection applications.*

Competent Person- An individual designated by the employer to be responsible for the immediate supervision, implementation, and monitoring of the employer's managed fall protection program who, through training and knowledge, is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has the employer's authority to take prompt corrective action with regard to such hazards.

Controlled Access Zone (CAZ) - 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 Distance- This is the distance a worker travels while the system applies force to arrest the fall. Many parts of a Fall Arrest System can be involved in dissipating the energy. These include deployment of Personal Energy Absorbers (PEAs), braking mechanisms in Self-Retracting Lifelines (SRLs), and the Anchorage System itself can deflect. Each component absorbs energy as it deploys, stretches, deflects or sags. This is complex, and usually requires a Qualified Fall Protection Engineer to determine how much energy gets apportioned to each part of the system, in order to accurately determine the total Deceleration Distance.

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.

Free Fall - This is the distance the worker falls freely, with nominally no force applied to slow him or her down. Free Fall takes all of the slack out of the Fall Arrest System and includes the distance required for arresting devices, such as Fall Arresters and Self-Retracting Lifelines (SRLs) to activate or lock-up.

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Guardrail System - a barrier erected to prevent employees from falling to lower levels.

Harness Stretch - The D-ring usually flips up and slides up the webbing when a fall is arrested. The webbing in the harness also stretches, and some harness models use highly elastic webbing which might be considered more comfortable to wear, but also gives us a lot more stretch. Depending on the harness, stretch varies from 1 to 2.5 feet (0.3 to 0.75 m). To keep things simple, use 1 foot for regular harnesses and add an additional 1.5 feet if using a stretch harness. This policy will use the term, “ΔXH” to define the additional harness stretch

Lanyard - A component consisting of a flexible rope, wire rope, or strap, which typically has a connector at each end for connecting to the body support and to a fall arrester, energy absorber, anchorage connector, 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 place, 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.

Low-slope roof - means a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Maximum Anchorage System Deflection (MASD) - Deflection of the anchorage system (including the stretch of a Vertical Lifeline, sag of a Horizontal Lifeline or flexing of an anchor beam) absorbs energy. It is therefore part of the Deceleration Distance.

Unless we have a Qualified Fall Protection Engineer to do the work for us, we do need some simple and conservative rules of thumb for estimating MASD.

- **Structural Components:** The amount that a truss, beam, or other structural component may deflect can be determined by a Qualified Person or by testing. Most large structural elements that are good places to anchor Fall Arrest Systems, such as beams, columns and trusses, are generally so rigid that their MASD is negligible and a fraction of the clearance margin if MASD is ignored. Most experienced workers should be able to judge whether or not their anchorage will deflect enough to warrant a more accurate determination (by testing or by a Qualified Person).
- **Vertical Lifeline Stretch:** Vertical Lifelines, that pass the current ANSI Z359.1 and CSA Z259.2.1 standards, are allowed to stretch 22% at a force of 1800 pounds (8 kN). Most workers use Personal Energy Absorbers (PEAs). Although slightly un-conservative in the worst possible case, a rule of thumb that is easy to remember is to assume that the VLL will stretch 10% for a 900 pound (4 kN) PEA and 15% for a 1350 pound (6 kN) PEA. The deployment force for the PEA is printed on its

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label. The MASD for a Vertical Lifeline will be the % stretch multiplied by the length of lifeline between the worker and the anchorage.

- **Horizontal Lifeline (HLL) Sag.:** Horizontal Lifelines typically sag 8% to 25% of the span when arresting a fall, depending on a number of factors. The determination of this sag is very complex, so the Manufacturer, Designer or Qualified Fall Protection Engineer usually provides complete information about the Required Clearance. As long as the use matches the specifications for the system (e.g., lanyard length, Free Fall, worker weight, etc.) the clearance is known and the user(s) do not need to determine MASD (or the clearance). In the absence of this information, it is usually safe to assume that HLLs that are sold as kits, and connected to RIGID end anchorages, will sag less than 15% of the span length.
- **Boom Lift Bounce:** In Boom lifts, the amount of deflection (bounce) that will occur when arresting a fall may be significant enough that it should be included in the clearance calculations. Bounce can be determined by a Qualified Fall Protection Engineer, or can be estimated in the field in a similar fashion to estimating VLL stretch. Boom out to the full horizontal extension of the lift, and position the basket slightly off the ground. Measure the elevation of the basket off the ground. Apply your weight (step into the basket) and measure the new elevation of the basket. The bounce at Fall Arrest may be estimated as the ratio of the arresting force of your PEA divided by your weight, times the change in basket elevation you measured.

Personal Fall Arrest System - a system used to arrest an employee in a fall from working level. It consists of an anchorage, connectors, a body/safety belt or body harness, and may include a lanyard, deceleration device, lifeline or suitable combination of these.

Position Device Systems - a body belt or 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- A person with a recognized degree or professional certificate and with extensive knowledge, training, and experience in the fall protection and rescue field who is capable of designing, analyzing, evaluating and specifying fall protection and rescue systems to the extent required by this standard.

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

Swing Fall Distance (SFD) - Gravity will always pull workers to the lowest possible elevation the system will allow, directly below the anchorage when the line deflects over an edge, when the line to the anchor is perpendicular to the edge. Workers who are connected to an anchorage system

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that is not directly overhead, or their line is not perpendicular to the edge, will drop in elevation as they swing from the location where the system starts to apply arrest forces until they come to rest wherever gravity pulls them.

To calculate SFD, measure or the length of line between the anchorage and where you will be working, and then measure from the anchorage to the platform or edge where you may fall from. The swing fall distance is the difference between these two measurements, and can actually be determined without subtraction if you don't retract the tape from the first measurement and read the measurement where the tape crosses the platform or edge for the second.

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

Walking/Working Surface - 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.

Responsibilities

The Program Administrator: Safety Manager

These people are responsible for:

- Developing and maintaining the program.
- Implementing the requirements of the program to assure the policies are adhered to at job sites by the Site Foreman and employees
- Conducting fall protection training to meet the requirements of this program

Superintendent

These people are responsible for:

- Ensuring their employees have been properly trained in fall protection
- Inspecting equipment and replacing damaged equipment when necessary
- Inspecting the area to determine what hazards exist or may arise during the work
- Giving specific and appropriate instructions to workers to prevent exposure to unsafe conditions
- Ensuring employees follow procedures given and understand the training provided

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- Appraising the steps our specialty subcontractors have taken to meet their fall protection requirements

Employees

These people are responsible for:

- Participating in fall protection training
- Reviewing and understanding the components of the written program (copies of this program may be obtained from the Manager of Safety/Superintendent in the corporate office and within each Foreman’s manual)
- Following the requirements of this program

If after reading this program, you find that improvements can be made, please contact the Manager of Safety/Superintendent. We encourage all suggestions because we are committed to the success of this program for clear understanding, safe behavior, and involvement from every level of the company.

General Fall Protection Requirements

OSHA currently regulates fall protection for construction under Part 1926, Subpart M. The standards for regulating fall protection systems and procedures are intended to prevent employees from falling off, onto or through working levels and to protect employees from falling objects. Fall protection requirements under the OSHA Construction regulations require considerable planning and preparation.

Through a competent person, management will determine if the walking/working surface on which its employees are to work have the strength and structural integrity to support employees safely. Employees are allowed to work on those surfaces only when the surfaces have the requisite strength and structural integrity as determined by the competent person.

Each employee on a walking/working surface which is 6 feet (1.8 meters) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, safety monitoring systems, or personal fall arrest systems for the following exposures as determined by the competent person:

- A. unprotected sides and edges
- B. leading edges
- C. hoist areas

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- D. ramps, runways and other walkways
- E. excavations
- F. holes
- G. roofing work on a low-slope roofs
- H. steep roofs
- I. wall openings
- J. walking/working surfaces not otherwise addressed

The exposure determination shall be made without regards to the use of personal protective equipment. When Brieser Construction purchases equipment and raw materials for use in fall protection systems; applicable ANSI and ASTM requirements will be met.

Anytime anyone puts on a full body harness for the use of fall protection, a competent person must fill out the Brieser "FALL PROTECTION PERMIT" located on page 22 of this policy prior to work activity. Exceptions: Aerial Lifts & Scissors Lifts

Criteria and Practices for Fall Protection Systems

Guardrail Systems

Guardrail systems shall meet the following requirements:

- top rail 42 inches above the walking/working level
- midrail (or suitable alternative) 21 inches above walking/working level
- ability to withstand a force of at least 200 pounds in any outward or downward direction
- so surfaced as to prevent injury from puncture, laceration or snagging of clothing designed so as not to constitute a projection hazard
- inspected at regular intervals

Safety Net Systems

Safety net systems shall meet the following requirements:

- installed as close as practicable under the walking/working surface, but in no case more than 30 feet (9.1 meters) below such level
- extend outward from outermost projection of the work surface
- installed with sufficient clearance under them to prevent contact with the surface due to impact on the net
- capable of absorbing an impact force equal to that produced by drop test specified in OSHA 1926.502 (c) (4) (ii) of the fall protection standard

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- inspected at least weekly for wear, damage, and/or deterioration defective components removed
- mesh opening not to exceed 36 square inches (230 square centimeters) nor be longer than 6 inches (15 centimeters) on any side

Personal Fall Arrest Systems

Personal fall arrest systems shall meet the following requirements:

- connectors, D-rings, snap hooks, lanyards, lifelines and anchorages are designed, constructed and installed according to specifications addressed in OSHA 1926.502 (d) (1-15)
- Snap hooks shall not be engaged to each other, to a D-ring to which another connector is attached, to a horizontal lifeline, or to any object which is incompatibly shaped as to allow roll-over disengagement
- limit maximum arresting force on an employee to 900 pounds when used with a body belt, 1,800 pounds when used with a body harness
- rigged such that an employee can neither free fall more than 6 feet (1.8 meters) nor contact any lower level
- body belts, harnesses and related components shall be used only for employee fall protection and not to hoist materials
- personal fall arrest systems and components subject to impact loading shall be removed from service until inspected and approved for use by the competent person
- prompt rescue of employees in the event of a fall
- inspected prior to each use for wear, damage and/or deterioration with defective components removed
- not to be attached to guardrail systems

General guidelines for choosing proper personal fall arrest systems:

- For all applications a worker's height is assumed to be 6 foot (this is, after a fall, from the top of the D-ring to the tip of the toes)
- Harness stretch is assumed to be 1 foot if using a regular harness or 2.5 feet if the worker will be wearing a "stretch" harness
- The clearance margin for all applications is 2 feet

Fixed Length Lanyard Guidelines-

- This is your typical harness & 6 foot lanyard setup. It could also include a Vertical Lifeline (VLL) that uses a Fall Arrestor that must be repositioned by the user (this does not include VLL's that utilize a "rope grab" that automatically reposition.
- The calculations are based off the ANCHORAGE POINT

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- Length of Lanyard + Full Deployment of Deceleration Device + Height of Worker + Harness Stretch + Clearance Margin
- If the length above is not less than the distance from the anchorage point to the ground, then a different harness or system of fall protection is needed

Automatic Length (AL) Systems:

Self-Retracting Lanyard Guidelines

- The calculations are based off the WORKING SURFACE
- Lanyard must be attached to anchorage at or above the D-ring
- Free Fall Distance + Deceleration Device + Combined Worker and Harness Stretch + Swing Fall Distance + Clearance Margin
- Free fall distance and the deceleration device length are manufacturer specifications
 - If this information cannot be found, contact Brieser Safety
 - If you are using the SRL in a Leading Edge configuration, the Free fall distance now becomes a calculation from the standpoint of a worker stepping or falling off the edge of the working platform. The worker's Harness Dorsal D-ring will start off nominally 5 feet above the edge, and the SRL will not begin to deploy cable until the D-ring passes the edge of the platform, so the Free Fall will be 5 feet plus the distance taken for the SRL to lock-off once cable starts to be pulled from the device. Let's assume it locks quickly so that the total Free Fall will be 5.5 feet including the lock-off.
- Worker Stretch
 - If the worker is standing there is no special precaution to take
 - If the worker is kneeling the amount of stretch is 2.5 feet
 - If the worker is lying down the amount of stretch is 4 feet
- Swing Fall Distance
 - If the worker will not be working directly below the anchorage point this must be added in
 - Calculated by:
 - Length of Lanyard from Anchorage to Worker – Distance from Anchorage to Working Surface

Using Overhead Cranes as Anchorage Points

Using cranes as a means of fall protection must meet the following requirements:

- A qualified person must determine that the set-up and rated load capacity of the crane meets or exceeds the requirements in 1926.502(d)(15)

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- The operator must be onsite and informed that the crane will be used for this purpose
- There is no load suspended from the crane when using it for fall protection
- Only one person can be “tied-off” to the crane at one time
- The crane must be locked/tagged out while using it for fall protection
- Crane cannot be “live” or moving

Positioning Device Systems

Positioning device systems shall meet the following requirements:

- rigged such that an employee cannot fall more than 2 feet (.9 meters)
- secured to an anchorage capable of supporting at least twice the potential impact load of an employee’s fall or 3,000 pounds, whichever is greater
- connectors, D-rings and snaphooks are designed, constructed and installed according to specifications addressed in OSHA 1926.502 (e) (1-8)
- inspected prior to each use for wear, damage and/or deterioration with defective components removed

Fall protection plan

This option is available only to employees engaged in leading edge work, precast concrete erection work, or residential construction work who can demonstrate that it is infeasible or it creates a greater hazard to use conventional fall protection equipment. The fall protection plan must conform to the following provisions:

- (1) The fall protection plan shall be prepared by a qualified person and developed specifically for the site where the leading edge work, precast concrete work, or residential construction work is being performed and the plan must be maintained up to date.
- (2) A qualified person shall approve any changes to the fall protection plan.
- (3) A copy of the fall protection plan with all approved changes shall be maintained at the job site.
- (4) The implementation of the fall protection plan shall be under the supervision of a competent person.
- (5) The fall protection plan shall document the reasons why the uses of conventional fall protection systems (guardrail systems, personal fall arrest systems, or safety nets systems) are infeasible or why their use would create a greater hazard.
- (6) The fall protection plan shall include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection from the conventional fall protection systems. For example, the employer shall discuss the extent

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to which scaffolds, ladders, or vehicle mounted work platforms can be used to provide a safer working surface and thereby reduce the hazard of falling.

- (7) The fall protection plan shall identify each location where conventional fall protection methods cannot be used. These locations shall then be classified as controlled access zones.
- (8) Where no other alternative measure has been implemented, the employer shall implement a safety monitoring system in conformance with 1926.502(h).
- (9) The fall protection plan must include a statement, which provides the name or other method of identification for each employee who is designated to work in controlled access zones. No other employees may enter controlled access zones.
- (10) In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) Brieser Construction shall investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incidents.

Controlled Access Zones (CAZ)

Controlled access zones are areas in which certain work may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems. Access to such zones must be controlled. The locations of CAZ must be identified and classified as controlled access zones.

Controlled access zones shall meet the following requirements:

- 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.
- When control lines are used, they shall be erected not less than 6 feet (1.8 m) nor 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 shall be erected not less than 6 feet (1.8 m) nor 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 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 guardrail system or wall.
- When used to control access to areas where overhand bricklaying and related work are taking place:
 - ✓ The controlled access zone shall be defined by a control line erected not less than 10 feet (3.1 m) nor more than 15 feet (4.5 m) from the working edge.
 - ✓ The control line shall extend for a distance sufficient for the controlled access zone to enclose all employees performing overhand bricklaying and related

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work at the working edge and shall be approximately parallel to the working edge.

- ✓ Additional control lines shall be erected at each end to enclose the controlled access zone.
 - ✓ Only employees engaged in overhand bricklaying or related work shall be permitted in the controlled access zone.
- Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:
 - ✓ Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) 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 (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m) [50 inches (1.3 m) when overhand bricklaying operations are being performed] from the walking/working surface.
 - ✓ Each line shall have a minimum breaking strength of 200 pounds (.88 kN).
 - On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.
 - On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

Roofing work on Low-slope roofs

Each employee engaged in roofing activities on low-slope roofs, with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system.

On roofs 50-feet or less in width, the use of a safety monitor alone is allowed

Steep Roofs

A full guardrail system, safety net system or personal fall arrest only is accepted

Safety Monitoring Systems

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A Safety Monitoring System is a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards. It is only used when no other alternate methods have been implemented. The Brieser site foreman or responsible person shall notify Safety before the use of this method.

Safety Monitoring Systems shall meet the following requirements:

- the Site Foreman will appoint a competent Laborer to monitor the safety of other employees
- the safety monitor will be competent to recognize fall hazards
- the competent person will warn employees working under unsafe conditions or performing unsafe acts
- the competent person must be located on same working surface and within visual sighting distance of the employees
- the competent person must be close enough to communicate orally
- the designated monitor shall not have other responsibilities that could draw attention away from safety monitoring duties
- mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-slope roofs
- no employee, other than an employee engaged in roofing work [on low-sloped roofs] or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system
- each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors

Warning Line Systems

Warning line systems shall meet the following requirements:

- erected around all sides of the roof work area
- erected not less than 6 feet (1.8 meters) from roof edge when mechanical equipment is not being used
- points of access, materials handling areas, storage areas and hosting areas shall be connected to the work area by an access path formed by two warning lines
- consist of ropes, wires or chains and supporting stanchions erected according to OSHA 1926.502 (f) (2) (i-v)
- no employee allowed in area between roof edge and warning line unless working in that area
- mechanical equipment on roofs used or stored only in areas where employees are protected by warning line system, guardrail system or personal fall arrest system

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Situations Requiring Fall Protection

Unprotected Sides and Edges

Our employees must be protected when they are exposed to falls from unprotected sides and edges of walking/working surfaces (horizontal and vertical surfaces) which are 6 feet or more above lower levels and shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems. We know that OSHA has determined that there is no safe distance from an unprotected side or edge that would render fall protection unnecessary.

Leading Edges

Each employee who is constructing a leading edge 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. We presume that it is feasible and will not create a greater hazard to implement at least one of the conventional fall protection systems if *Brieser Construction* employees are engaged in leading edge work.

Hoist Areas

In all situations where equipment and material hoisting operations take place, we will protect our employees from fall hazards. When we are involved in hoisting operations, we will use the following fall protection systems at these specific locations:

- 1) When operations require the materials to be lifted by crane to a landing zone (and do not require an employee to lean through the access opening or out over the edge to receive or guide materials), we will use personal fall arrest equipment or a guardrail system.
- 2) When guardrails (or chains or gates) are removed to facilitate hoisting operations, and one of our employees must lean through the access opening or out over the edge to receive or guide materials, they will be protected by a personal fall arrest system.

Covers

All covers shall meet the following requirements:

- secured when installed so as to prevent accidental displacement by wind, equipment or employees
- capable of supporting at least twice the maximum load to which it is exposed (e.g., vehicles, equipment, workers)

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- color coded or marked with the word **“HOLE”** or **“COVER”** to provide warning of the hazard

Formwork and Reinforcing Steel

A jobsite that requires formwork or reinforcing steel work 6 feet or more above lower levels, the following fall protection systems will be used to protect our employees:

- 1) Personal fall arrest or positioning device

Ramps, Runways, and Other Walkways

We equip all ramps, runways, and other walkways with guardrails when employees are subject to falling 6 feet or more to lower levels or less if deemed a safety hazard and construction of a ramp, runway or guardrail would prove safer.

Overhand Bricklaying and related work

In lieu of conventional fall protection a Controlled Access Zone may be utilized. An exception to this rule is if an employee must reach more than 10 inches below the level of the walking/working surface on which they are working. In this case each employee shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

Excavations

At a jobsite that may have excavation edges that will not be readily seen (i. e., concealed from view by plants, etc.) and when the excavation is 6 feet or more deep we protect these excavations by:

- 1) Guardrails

In addition, walls, pits, shafts, and similar excavations 6 feet or more deep will be guarded to prevent employees from falling into them by:

- 1) Guardrails and/or fences

Erecting Precast Concrete

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We presume that it is feasible and will not create a greater hazard to implement at least one of the conventional fall protection systems for our precast concrete erection work. When our employees are erecting precast concrete members 6 feet or more above a lower level they must be protected from falling by:

- 1) Guardrails or personal fall arrest systems

Wall Openings

Employees who are exposed to the hazard of falling out or through wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 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 must be protected from falling.

We protect our employees from falls out or through wall openings by the following methods:

- 1) Guardrails or personal fall arrest systems

Walking/Working Surfaces Not Otherwise Addressed

We realize there will be situations that are not covered by our written safety plan, for which we have the duty to provide fall protection. All employees exposed to falls of 6 feet or more to lower levels must be protected by a guardrail system, safety net system, or personal fall arrest system except where specified otherwise in Part 1926.

Protection from Falling Objects

Employees potentially exposed to injury from falling objects are required to wear a hard hat, and shall be protected by one of the following measures, designed and installed per OSHA 1926.502 (j), as determined by the competent person:

- Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels.
- Erect a canopy structure and keep potential fall objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced.
- Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a high level so that those objects would not go over the edge if they were accidentally displaced.

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Training Requirements

Under no circumstances shall employees work in areas where they might be exposed to fall hazards, do work requiring fall protection devices, or use fall protection devices until they have successfully completed Brieser's fall protection training program.

The training program includes classroom instruction and operational training on recognition and avoidance of unsafe conditions and the regulations applicable to their work environment for each specific fall hazard the employee may encounter. A Foreman, the Manager of Safety/Superintendent, or a contracted consultant/trainer gives the training program. A competent person qualified in each aspect of the program must cover the following areas:

- A. The nature of fall hazards in the work area.
- B. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used.
- C. The use and operation of guardrail systems, personal fall arrest systems, safety net system, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used.
- D. The role of each employee in the safety monitoring system when this system is used.
- E. The limitation on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.
- F. The correct procedures for handling and storage of equipment and material and the erection of overhead protection.
- G. The role of employees in the written Fall Protection Plan.
- H. The standards contained in OSHA 29 CFR 1926, subpart M, *Fall Protection*.

The Foreman, Manager of Safety/Superintendent, or a contracted consultant/trainer will identify all current and new employees who require training, and will schedule the classroom instruction for those employees. Training on the above components will occur both in the classroom and on the job site, as appropriate. Classroom training will cover written policy/procedures on fall protection and include a training video on the subject. Job site instruction will include demonstration of and practice in wearing fall protection equipment and any instruction necessary for a specific job.

Certification of Training

- The Program Administrators will verify compliance with the training requirements of this plan via the Fall Protection Training Record.

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- Brieser management shall maintain a record of the latest training certification for each employee, and that record shall contain:
 1. The date(s) the training was conducted
 2. The name, title, and qualifications & signature of person conducting training (i.e. Competent Person)
 3. The name, job title & signature of person being trained, and
 4. A brief summary or outline of the information that was included in the training session

Retraining

- Documented refresher training shall be provided at least annually.
- In addition to annual refresher training, documented retraining shall be provided, and documented as “retraining,” under the following circumstances:
 1. Changes to the workplace, which renders the initial training (or previous refresher training or retraining) obsolete.
 2. Changes in the types of fall protection systems or equipment to be used, which renders the previous training obsolete.
 3. Inadequacies in an effected employee’s knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill. The Manager of Safety/Superintendent or the site Foreman has the responsibility of determining when an employee who has already been trained does not have the understanding and skill required by the training program

Interim Training

- Where warranted, a competent person in the form of short “tool box” meetings provides interim training with the employees in the work area.
- Topics for these training meetings are determined by the type and scope of the job itself, and the need for safety information identified by the employees or perceived by the competent person.
- All interim training meetings shall be documented

Enforcement

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Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The jobsite Superintendent, as well as individuals in the Management Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

Accident Investigation, Reporting and Analysis

All accidents that result in injury to workers, regardless of their nature, are 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 (e.g., a near miss) occurs, 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.

Fall Protection Plan Audit

- The fall protection plan shall undergo an annual management audit to evaluate the plan's effectiveness and the need for revision and upgrade.
- Management shall evaluate the input of the competent person and other representatives of supervision along with feedback from the employees. This information will be used to gauge the effectiveness of the plan and incorporate necessary improvements.

Inspection

Fall protection equipment shall be inspected by the authorized person at least once at the beginning of each eight-hour shift in which it is used to verify that it has not sustained any wear or damage that would require its removal from service.

Fall protection and fall rescue equipment shall be inspected every six months by a competent person or a competent rescuer, as appropriate, to verify that the equipment is safe for use. The inspection shall be documented and scanned into the Brieser system. A color coding system is used for verification to users. January-June is red and July-December is white.

Fall protection and fall rescue equipment shall be inspected and shall include, but not be limited to:

- absence or illegibility of markings or tags;
- absence of any elements affecting the equipment form, fit, or function;

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- evidence of defects in or damage to hardware elements including cracks, sharp edges, deformation, corrosion, chemical attack, excessive heating, alteration, or excessive wear;
- evidence of defects in, or damage to, straps or ropes including fraying, unsplicing, enlacing, kinking, knotting, roping, broken or pulled stitches, excessive elongation, chemical attack, excessive soiling, abrasion, alteration, needed or excessive lubrication, excessive aging, or excessive wear;
- alteration, absence of parts, or evidence of defects in, damage to, or improper function of, mechanical devices and connectors;
- any other condition that calls to question the suitability of the equipment for its intended purpose.

Fall Protection Log

EQUIPMENT	EQUIPMENT #	DATE	GOOD	BAD	INSPECTED BY	REMARKS INCLUDE

**Fall Protection
Permit**

Job Name: _____	Permit Start Date: ____/____/____
Job Number: _____	Permit End Date: ____/____/____
Job Location: _____	Competent Person: _____
Site Foreman: _____	Scan to: Permits Completed/Fall Protection

Work Area Description

Location (Building, Area, Etc.): _____

Description of Working Surface: _____

Potential Fall Hazards

<input type="checkbox"/> Aerial Lifts	<input type="checkbox"/> Open Holes	<input type="checkbox"/> Stairways
<input type="checkbox"/> Balconies	<input type="checkbox"/> Open Sided Floors	<input type="checkbox"/> Steel Erection
<input type="checkbox"/> Dangerous Equipment	<input type="checkbox"/> Precast Concrete	<input type="checkbox"/> Wall Openings
<input type="checkbox"/> Decks	<input type="checkbox"/> Roof Slope Greater than 4 in 12	<input type="checkbox"/> Work involves Cutting Holes in Roof
<input type="checkbox"/> Excavations	<input type="checkbox"/> Roof Slope Less than 4 in 12	<input type="checkbox"/> Work Between Unprotected Edge & Warning Line
<input type="checkbox"/> Floor Openings	<input type="checkbox"/> Roof Structure Assessment	<input type="checkbox"/> Other
<input type="checkbox"/> Ladders	<input type="checkbox"/> Scaffold Erection/Dismantling	Description: _____
<input type="checkbox"/> Leading Edges	<input type="checkbox"/> Skylights	_____

Method of Fall Protection

<input type="checkbox"/> Controlled Access Zone*	<input type="checkbox"/> Horizontal Lifeline*	<input type="checkbox"/> Warning Line*
<input type="checkbox"/> Cover/Hatch	<input type="checkbox"/> Personal Fall Arrest System	<input type="checkbox"/> Other*
<input type="checkbox"/> Fall Restraint	<input type="checkbox"/> Safety Monitor*	Description: _____
<input type="checkbox"/> Guard Rails	<input type="checkbox"/> Vertical Lifeline*	_____

*Must be approved by Brieser Safety

Describe Controlled Access Zone/Horizontal Lifeline/Safety Monitor/Vertical Lifeline/Warning Line/Other: _____

Method of Protecting Employees Below Working Surface

<input type="checkbox"/> Barricades	<input type="checkbox"/> Toe boards (Scaffold/Openings)
<input type="checkbox"/> Hard Hats Required (sign posted)	<input type="checkbox"/> Warning Signs
<input type="checkbox"/> Netting	<input type="checkbox"/> Other

Describe Overhead Protection: _____

Materials and Tools

Describe how materials and tools will be handled, stored, secured, etc.:

Other Hazards or Concerns

Please describe any other hazards or concerns associated with the work not explained above:

Fall Protection
Permit

Rescue Plan

Number in case of fall: (_____) _____ - _____ OR 911
Describe method of rescue: _____

Person responsible for implementing rescue plan: _____

Safety Monitors

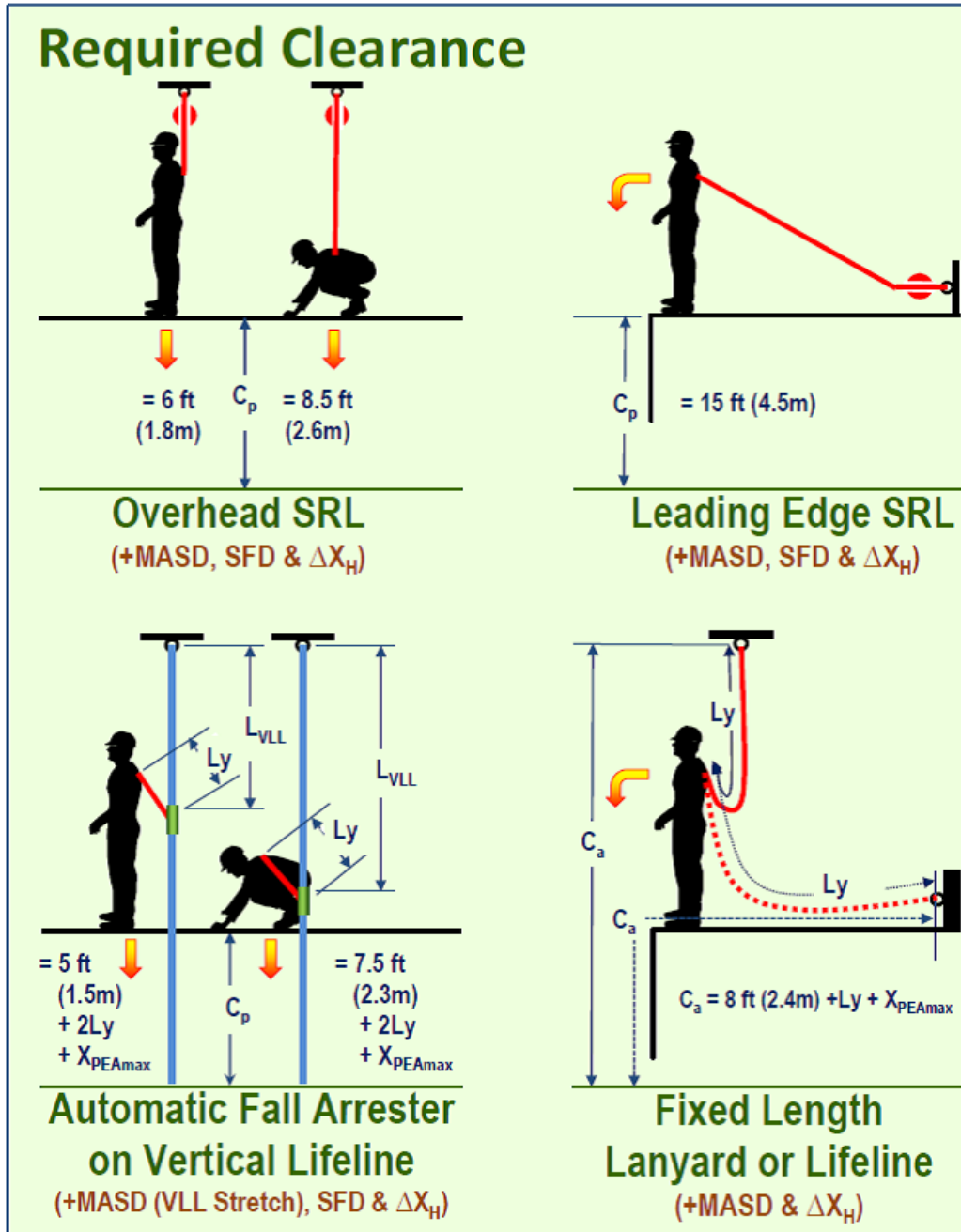
Name:	Print	Sign
1	_____	1 _____
2	_____	2 _____
3	_____	3 _____

Signatures

_____	_____	_____
Competent Person (Print)	Sign	Date

Affected Employees

Print	Sign	Date



Fall Protection
Clearance Formulas & Pictograms

Where: Cp = Required Clearance below the Platform = Ca - Ha
Ca = Required Clearance below the Anchorage = Cp + Ha
Ha = Height of the Anchorage above the platform
Ly = Length of Lanyard or Lifeline from the worker to the Anchorage (or Fall Arrester)
XPEAmax = The maximum deployment of the Personal Energy Absorber

**The following factors, when applicable, must be added
to the basic clearance determined in accordance with the Pictograms**

ΔX_H Add 1.5 feet (0.45m) when using a stretch harness.

SFD: Add the difference between the length of line and the distance from the anchorage to the platform edge where gravity will pull you.

MASD: (Maximum Anchorage System Deflection):

Structural Components If structures appear flexible, test or check with a Qualified Person.

VLL stretch Unless you have reliable information otherwise, assume 10% stretch for a 900-pound (4 kN) PEA or 15% stretch for a 1350 pound (6 kN) PEA.

Alternatively, determine how much the VLL stretches under your weight. Multiply that stretch by the ratio of the deployment force of your PEA divided by your weight.

HLL Sag If clearance information is not provided by the Manufacturer, Designer or Qualified Person, Assume 15% of span length for rigid end anchorages or 25% of span length for deformable anchorages.

Boom Lift Bounce Determine how much the basket drops under your weight. Multiply that drop by the ratio of the deployment force of your PEA divided by your weight.

**BRIESER CONSTRUCTION
SAFETY & HEALTH MANUAL
SECTION 22
FALL PROTECTION
SUB-SECTION
TRAINING**

ATTENDANCE ROSTER

Brieser Construction

EMPLOYEE NAME (Print or Type)	EMPLOYEE SIGNATURE	TRADE	JOB TITLE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

ROUTING	PERSONEL MANAGER	Add to Training Database
	SCAN	SAFETY/FALL PROTECTION/TRAINING/MMDDYY TRAINING CERTIFICATION

Fall Protection Learning Exercise

Score: _____ %

Employees Name: _____ **Date:** _____
Company: _____ **Instructor:** _____
Trade: _____ **Job Title:** _____

Answer each of the following questions “True” or “False” by circling the appropriate letter.

- T F** 1. Each employee on a walking/working surface which is 6 feet (1.8 meters) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, safety monitoring systems, or personal fall arrest systems as determined by a competent person?
- T F** 2. With a personal fall arrest system you must be rigged so that you cannot fall more than 6 feet?
- T F** 3. Top Guardrail should be 42 inches plus or minus 3 inches above the walking working level and have the ability to withstand a force of a least 200 pounds in any outward or downward direction?
- T F** 4. A Controlled Access Zone (CAZ) is 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?
- T F** 5. Safety net systems shall be inspected at least monthly for wear, damage, and/or deterioration, defective components removed?
- T F** 6. You can use your body belts for a fall arrest system until they wear out before replacing?
- T F** 7. Your safety monitor must be a competent person to recognize fall hazards?
- T F** 8. Your employer needs to verify compliance with the training requirements of this plan via the Employee Training Record Attendance Rooster?
- T F** 9. Warning lines are used to alert you to an unprotected side or edge?
- T F** 10. All covers shall be color-coded or they shall be marked with the word “HOLE” or “COVER” to provide warning of the hazard?

Fall Protection Learning Exercise

Answer Sheet

- True** 1. Each employee on a walking/working surface which is 6 feet (1.8 meters) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, safety monitoring systems, or personal fall arrest systems as determined by a competent person?
- True** 2. With a personal fall arrest system you must be rigged so that you cannot fall more than 6 feet?
- True** 3. Top Guardrail should be 42 inches plus or minus 3 inches above the walking working level and have the ability to withstand a force of a least 200 pounds in any outward or downward direction?
- True** 4. A Controlled Access Zone (CAZ) is 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?
- False** 5. Safety net systems shall be inspected at least monthly for wear, damage, and/or deterioration, defective components removed? *They need to be inspected weekly.*
- False** 6. You can use your body belts for a fall arrest system until they wear out before replacing? *As of January 1, 1998, the use of body belts for fall arrest is prohibited.*
- True** 7. Your safety monitor must be a competent person to recognize fall hazards?
- True** 8. Your employer needs to verify compliance with the training requirements of this plan via the Employee Training Record Attendance Rooster?
- False** 9. Warning lines are used to alert you to an unprotected side or edge? *Warning lines are used to alert you to a leading edge.*
- True** 10. All covers shall be color-coded or they shall be marked with the word “HOLE” or “COVER” to provide warning of the hazard?