

Chapter 20 FALL PROTECTION

PURPOSE

The nature of the sign industry requires workers to perform their duties at heights that are hazardous. These hazards can be debilitating or fatal unless employees understand safe work practices when working at heights, and how to recognize an unsafe condition. In addition to working at heights, there is a potential for injury from slips and falls on the ground. Every employee should recognize hazardous situations in productions and office areas. Exposure determinations are made without regard to the use of personal protective equipment. All personal protective equipment must be approved by Sign Designs, Inc. and must meet the applicable ANSI & ASTM requirements.

RESPONSIBILITY

Supervisors in each area are responsible to provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards. When workers are first employed, they shall be given instructions regarding the hazards and safety precautions applicable to the type of work in question and directed to read the Code of Safe Practices. The employer shall permit only qualified persons to operate equipment and machinery. Where employees are subject to known job site hazards, such as, flammable liquids and gases, poisons, caustics, harmful plants and animals, toxic materials, confined spaces, etc., they shall be instructed in the recognition of the hazard, in the procedures for protecting themselves from injury, and in the first aid procedure in the event of injury.

The program in each area shall include the following:

1. The nature of fall hazards in the work area.
2. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used
3. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used
4. The role of each employee in the safety monitoring system when this system is used
5. The role of each employee in recognizing hazards in production areas and office areas.
6. The role of employees in fall protection plans

Each employee shall receive training upon hire. Retraining is required in instances where:

1. Changes in the workplace render previous training obsolete
2. Changes in the types of fall protection systems or equipment to be used render previous training obsolete
3. Inadequacies in an employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

Sign Designs, Inc. will verify training by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the management, and the date that Sign Designs, Inc. management determined training was deemed adequate.

GENERAL SAFETY

The supervisor on-site shall inspect and determine if the walking/working surfaces on which employees are to work have the strength and structural integrity to support employees safely. Employees shall be allowed to work on those surfaces only when the surfaces have the requisite strength and structural integrity. Ladders with non-conductive siderails may be used within the specification of the ladder height and weight limits. Ladders must be secured to prevent tipping. Employees must follow the guidelines in the Portable Ladder Department of this policy. Scaffolds may be used as prescribed in the Scaffold section of this policy. Manlift equipment (Bucket Trucks and Scissor Lifts), which is the most frequently used form of elevation, may be used to elevate the employee where the supervisor on-site determines the lift can be used safely. Employees must use safety lines and full body harnesses if elevated above 6 feet. Only properly trained employees may work from a bucket truck. Guidelines as stated in Mobile Crane & Ladder Department section of this policy and Lifting/Mobile Equipment section of this policy must be followed.

Unprotected sides and edges. Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.

Guardrail Systems. A standard guardrail shall consist of top rail, midrail or equivalent protection, and posts, and shall have a vertical height within the range of 42 inches to 45 inches from the upper surface of the top rail to the floor, platform, runway, or ramp level.

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. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the production supervisor shall develop and implement a fall protection plan which meets the requirements of this program.

Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing

that it is appropriate to implement a fall protection plan which complies with OSHA 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.

Each employee on a walking/working surface 6 feet (1.8 m) or more above a lower level where leading edges are under construction, but who is not engaged in the leading edge work, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

Hoist areas. Each employee in a hoist area shall be protected from falling 6 feet (1.8 m) or more to lower levels by guardrail systems or personal fall arrest systems. If guardrail systems, [or chain, gate, or guardrail] or portions thereof, are removed to facilitate the hoisting operation (e.g., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and materials, for example), that employee shall be protected from fall hazards by a personal fall arrest system.

Holes. Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet (1.8 m) above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes.

Each employee on a walking/working surface shall be protected from tripping in or stepping into or through holes (including skylights) by covers.

Each employee on a walking/working surface shall be protected from objects falling through holes (including skylights) by covers.

Formwork and reinforcing steel. Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet (1.8 m) or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.

Ramps, runways, and other walkways. Each employee on ramps, runways, and other walkways shall be protected from falling 6 feet (1.8 m) or more to lower levels by guardrail systems.

Excavations. Each employee at the edge of an excavation 6 feet (1.8 m) or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barrier. Each employee at the edge of a well, pit, shaft, and similar excavation 6 feet (1.8 m) or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers.

Dangerous equipment. Each employee less than 6 feet (1.8 m) above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards. Each employee 6 feet (1.8 m) or more above dangerous equipment shall be protected from fall hazards by guardrail systems, personal fall arrest systems, or safety net systems.

Overhand bricklaying and related work. Except as otherwise provided in this section, each employee performing overhand bricklaying and related work 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 shall work in a controlled access zone. Each employee reaching more than 10 inches (25 cm) below the level of the walking/working surface on which they are working, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

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. Or, on roofs 50-feet (15.25 m) or less in width, the use of a safety monitoring system alone [i.e. without the warning line system] is permitted.

Steep roofs. Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems.

Wall openings. Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet (1.8 m) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 m) above the walking/working surface, shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.

Walking/working surfaces not otherwise addressed. Each employee on a walking/working surface 6 feet (1.8 m) or more above lower levels shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

Protection from falling objects. When an employee is exposed to falling objects, the supervisor on-site shall have each employee wear a hard hat and shall implement one of the following measures:

1. Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels.
2. 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.
3. 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 higher level so that those objects would not go over the edge if they were

accidentally displaced.

Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices.

- (a) Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to falling in excess of 7 1/2 feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaftways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these Orders. 1730 of the Construction Safety Orders.
- (b) Personal fall arrest systems and their use shall comply with the provisions set forth below. Except as permitted in subsections (c) and (d), body belts shall not be used as part of a personal fall arrest system.
 - (1) On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.
 - (2) Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
 - (3) Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
 - (4) Except as provided in Section 1670(b)(5), when vertical lifelines are used, each employee shall be attached to a separate lifeline.
 - (5) Lifelines shall be protected against being cut or abraded.
 - (6) Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
 - (7) Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, ripstitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
 - (8) Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers except for when they are used in conjunction with hot work where the lanyard may be exposed to damage from heat or flame.
 - (9) Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:
 - a. as part of a complete personal fall arrest system which maintains a safety factor of at least two; and
 - b. under the supervision of a qualified person.
 - (10) Personal fall arrest systems, when stopping a fall, shall:
 - a. limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
 - b. be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level, and, where practicable, the anchor end of the lanyard

- shall be secured at a level not lower than the employee's waist;
 - c. bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet; and
 - d. have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.
 - (11) The attachment point of the body belt shall be located in the center of the wearer's back. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.
 - (12) Body belts, harnesses, and components shall be used only for employee protection and not to hoist materials. Body belts used in conjunction with fall restraint systems or positioning devices shall limit the maximum arresting force on an employee to 900 pounds.
 - (13) The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
 - (14) Personal fall arrest systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.
 - (15) Body belts shall be at least one and five-eighths (1 5/8) inches wide.
 - (16) Personal fall arrest systems shall not be attached to hoists, except as specified in these Orders, nor shall they be attached to guardrails.
 - (17) When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the working level or working area.
 - (18) Each personal fall arrest system shall be inspected not less than twice annually by a competent person in accordance with the manufacturer's recommendations. The date of each inspection shall be documented.
- (c) Positioning device systems. Positioning device systems and their use shall conform to the following provisions:
- a. Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet.
 - b. Positioning device systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.
 - c. The use of non-locking snaphooks shall be prohibited after January 1, 1998.
 - d. Anchorage points for positioning device systems shall be capable of supporting two times the intended load or 3,000 pounds, whichever is greater.
- (d) Personal fall restraint.
- a. Body belts or harnesses may be used for personal fall restraint.
 - b. Body belts shall be at least one and five-eighths (1-5/8) inches wide.
 - c. Anchorage points used for fall restraint shall be capable of supporting 4 times the intended load.
 - d. Restraint protection shall be rigged to allow the movement of employees only as far as the sides of the working level or working area.
- (e) Lanyards shall be secured to a substantial member of the structure or to securely rigged lines.
- (f) All fall arresting, descent control, and rescue equipment shall be approved as defined in Sections 1504 and 1505 and used in accordance with the manufacturer's recommendations.
- (g) If an employee's duties require horizontal movement, rigging shall be provided so that the attached lanyard will slide along with the employee. Such rigging shall be provided for all suspended staging, outdoor advertising sign platforms, floats, and all other catwalks, or walkways 7 1/2 feet or more above the ground or level beneath. Note: For additional fall protection requirements during steel erection operations, see Article 29.
- (h) Any lanyard, safety belt, harness, dropline, lifeline or other component subjected to in-service loading, as distinguished from static load testing, shall be immediately removed from service and

shall not be used again for employee safeguarding. Note: For the purpose of this subsection, “in-service loading” shall mean loading equivalent to that received in a drop test.

- (i) Lifelines and anchorages shall be capable of supporting a minimum dead weight of 5000 pounds. Exception: Retractable lanyards, controlled descent and rescue devices provided they are approved as defined in Sections 1504 and 1505.
- (j) Lifelines subject to excessive fraying or rock damage shall be protected and shall have a wire rope center. Seriously worn or damaged rope shall be promptly removed from service.
- (k) All safety belts, harnesses and lanyards placed in service or purchased on or before February 1, 1997, shall be labeled as meeting the requirements contained in ANSI A10.14-1975, Requirements for Safety Belts, Harnesses, Lanyards, Lifelines and Drop Lines for Construction and Industrial Use or be in compliance with the requirement stated in Subsection (l).
- (l) All personal fall arrest, personal fall restraint and positioning device systems purchased or placed in service after February 1, 1997, shall be labeled as meeting the requirements contained in ANSI A10.14-1991 American National Standard for Construction and Demolition Use, or ANSI Z359.1-1992 American National Standard Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.

FALL PROTECTION PLAN

"Fall protection plan." This option is available only to employees engaged in leading edge work who can demonstrate that it is infeasible or it creates a greater hazard to use conventional fall protection equipment. This section does not apply to Mobile Lifting of employees, who are always required to use proper fall protection. Sign Designs, Inc. does not engage in precast concrete work or residential construction. The fall protection plan will conform to the following provisions:

1. The fall protection plan shall be prepared by the install supervisor and developed specifically for the site where the leading edge work is being performed and the plan must be maintained up to date.
2. Any changes to the fall protection plan shall be approved by the install supervisor,
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 the install supervisor.
5. The fall protection plan shall document the reasons why the use 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. Where the elevation is 25 feet or more above the ground, water surface, or continuous floor level below, and when the use of personal fall arrest systems, personal fall restraint systems, positioning device systems or more conventional types of protection are clearly impractical, the exterior and/or interior perimeter of

the structure shall be provided with an approved safety net extending at least 8 feet horizontally from such perimeter and being positioned at a distance not to exceed 10 feet vertically below where such hazards exist, or equivalent protection provided safety nets shall extend outward from the outermost projection of the work surface as follows:

Vertical Distance (VD) up to 5 feet requires 8 feet of Horizontal Distance (HD) - +5 feet up to feet of VD requires 10 feet of HD - More than 10 feet but not to exceed 30 feet of VD requires 13 feet of HD.

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 plan shall discuss the extent 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 and the plan must comply with the criteria in OSHA Section 1926.502(g).
8. Where no other alternative measure has been implemented, the plan shall implement a safety monitoring system in conformance with OSHA Section 1926.502(h).
9. The fall protection plan will 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.

In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) Sign Designs, Inc. will 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.

The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

SAFETY MONITOR

The safety monitor shall be trained by the production supervisor and competent to recognize fall hazards. The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner. The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored. The safety monitor shall be close enough to communicate orally with the employee, and shall not have other responsibilities which could take the monitor's attention from the monitoring function.