

UNIVERSITY OF TOLEDO

SUBJECT: FALL PROTECTION PROGRAM

Procedure No: S-08-010

PURPOSE OF PROGRAM

The purpose of the University of Toledo's Fall Protection Program is to ensure that affected employees can identify and control fall hazards in order to protect themselves against those hazards. This program shall be used in conjunction with UT's policies and procedures involving the protection of workers in the workplace.

PROGRAM

This program applies to all University of Toledo employees whose position requires them to walk or work on unprotected sides and edges, leading edges, unprotected holes and roofs 6 feet or more above a lower level.

This program does NOT apply when individuals are making an inspection, investigation or assessment of workplace conditions prior to the start of construction work or after construction work has been completed, unless the employee or supervisor deems it necessary.

The following fall hazards are NOT covered under the scope of this program:

- Stairways and fixed ladders less than 20 feet in height;
- Construction of electric transmission and distribution lines and equipment;
- Steel erection;
- Cranes and derricks as noted in 20CFR 1926 Subpart N and;
- Scaffolding.

Fall protection requirements regarding these situations are found in other parts of the OSHA Construction and General Industry Standards. In addition, this program does NOT cover retrieval equipment used for confined spaces on campus.

The following fall hazard IS covered under the scope of this program:

- Portable ladders.

Appendix A in this program will cover all the necessary measure to be taken when using a portable ladder.

FALL PROTECTION SELECTION

Prior to the selection of any fall protection method, the strength of the walking/working surface shall be determined by a competent person or supervisor. The walking/working surface shall be capable of supporting the expected loads, including a safety factor. OSHA generally encourages the employer to select engineering controls first when attempting to control a hazard. Examples of engineering controls include guardrails, barriers and covers. Refer to Section 1926.501 of the OSHA Standard.

Site Specific Fall Protection Plan

Site Specific Fall Protection Plans (SSFPP) will generally not be used by the University as a means of protection employees/students from falls. The Safety & Health Department will work with supervisors, and outside consultants if needed, to provide a physical means of fall protection for all workers.

Guardrail Construction Details

To obtain details on guardrail construction, refer to Section 1926.502(b) of the OSHA Standard. Important points to consider include a toe board, height of the rails, midrails or screens, and strength requirements. When an individual's center of gravity is located outside of the protection offered by the guardrails, alternative fall protection is necessary. Examples of this situation include individuals working on stilts, leaning over, through or under guardrails to perform work, or employees on portable ladders working near the edge of a roof, open-window, or floor opening. Guardrails can be used for many fall protection applications.

Positioning Devices

Positioning devices such as safety belts are no longer an acceptable means of fall protection. Full-body harnesses must be used for fall hazard protection. Refer to Section 1926.502(e) in the OSHA Standard regarding positioning device requirements. Note the strength for snaphook requirements for positioning devices.

Warning Line System

Warning lines may be used on low-sloped roofs in combination with other controls such as safety monitors, guardrails and personal fall arresting equipment or nets. Warning lines shall be made of rope, wire, or chains and flagged every six feet with highly visible material. The line shall be supported by stanchions and the line shall be between 34 and 39 inches above the walking/working surface. The stanchions shall be capable of withstanding a horizontal force of 18lbs. without tipping over. The warning line shall have a minimum tensile strength of 500lbs. Additional details regarding warning lines can be found in Section 1926.502(f) of the OSHA Standard.

Controlled Access Zones (CAZs)

A controlled access zone may be used as an option for overhand bricklaying and related activities or as part of a Site Specific Fall Protection Plan. Only authorized employees may enter this zone. Controlled access zones shall be provided between six and twenty-five feet from an unprotected or leading edge, except for precast concrete work. The controlled access zones will be marked by a line that consists of rope, wire, tape or equivalent materials, supported by stanchions and flagged every six feet. The line must have a minimum breaking strength of 200lbs. and be located between 39 and 45 inches above the walking/working surface. The line must be approximately parallel to the leading edge or exposed edge, and should be fastened to a secure surface such as a guardrail.

Safety Monitoring

For this section, the term "at risk" individual shall be an individual potentially exposed to a fall hazard.

A safety monitor is a competent individual (able to recognize fall hazards), located on the same working/walking surface as other at-risk individuals, who shall warn the individuals if they are acting in an unsafe manner that could result in a fall or are unaware of a fall hazard. The monitor shall be able to see the employees, not have other immediate work responsibilities, and orally communicate with the at-risk individuals. Safety monitors may be used on low sloped roofs less than 50 feet in width as the sole means of protection. Safety monitors may be used for low-sloped roof work in combination with other controls or in a Site Specific Fall Protection Plan. See section 1926.502(h) in the OSHA Standard for additional details regarding safety monitors.

Covers

Covers shall be capable of withstanding at least twice the expected maximum load. The load could be any of the following based on the project: axle load, weight of equipment, or weight of person. Consideration should be given to concentrated and impact loads. The covers shall be secured to prevent movement and either color coded or labeled "HOLE" or "COVER". See section 1926.502(i) of the OSHA Standard for additional details.

Personal Fall Arresting Equipment

Personal fall arresting equipment should be purchased from a single manufacturer. The equipment is tested as a system and substitution of equipment from another manufacturer of personal fall arrest equipment could result in a component or system failure. It is important to realize that components from a single manufacturer may not be compatible with all types of fall protection equipment. Personal fall arresting equipment shall be used only for this purpose. Personal fall arresting equipment and associated system components are designed for a combined weight (employee plus tools, etc.) of 310lbs. If the combined weight exceeds 310lbs., system modifications may be necessary.

Free-fall distance shall be kept at a minimum. In no cases shall the free-fall distance exceed 6 feet. Free fall in excess of this distance can result in system failure and/or injury. In most situations the anchor point should be located near or above the shoulder level. In selecting fall protection equipment, consideration should be given to the possibility of injuries associated with "swinging" after the fall, retrieval and the location of where the individual will be after the fall.

Consideration should be given to conditions that could affect the performance of the equipment selected. The following is a short list of conditions that could adversely affect the equipment being used: temperature extremes, use of corrosive substances (solids, liquids or gases), welding/torch cutting, abrasive blasting, high moisture, grease/oil, and chemicals. Wire rope should never be used where an electrical hazard exists, nor should it be used without a shock-absorbing lanyard.

Safety belts are not acceptable for personal fall arrest equipment, but may be used for positioning. Equipment designed for fall protection shall not be used for positioning. Shock absorbing lanyards shall be used where possible. Lanyards, lifelines, full-body harnesses shall be protected against abrasion or cutting. Special beam wraps are available for anchor points that would cause a lanyard to abrade or be cut. See your supervisor for information on using beam wraps.

Anchor Points

Anchor points must be capable of supporting 5000lbs. per attached employee. The adequacy of an anchor point must be determined by a competent individual. Where there is doubt about the strength of an anchor point, an engineer must be consulted. Permanently installed anchor points should be provided for fall hazards that are routinely encountered. Anchor points for fall protection and exposed to corrosive conditions (acids, bases, moisture) should be corrosive-resistant.

TRAINING AND EDUCATION

Each employee exposed to a fall hazard shall be trained to recognize the hazards and take action to prevent a fall. Training shall be provided by a competent person and shall cover the following topics:

- The nature of the fall hazard;
- The correct procedures for erecting, maintaining, disassembling and inspecting the fall protection system to be used;
- The use and operation of guardrails, personal fall arrest systems, safety net system, warning line system, safety monitoring systems, controlled access zones and other protection to be used;
- The role of each employee in the safety monitoring system;
- The limitations of the use of mechanical equipment during the performance of roofing work on low-sloped roofs;
- The correct procedure for the handling and storage of equipment and materials and the erection of overhead protection;
- The role of employees in the Fall Protection Program and;
- The OSHA Fall Protection Standard

Retraining

Retraining (refresher) shall be provided when any one of the following exists:

- Changes in the workplace or fall protection equipment that render previous training obsolete or;
- If the individual demonstrates a lack of knowledge regarding the basic components of the Fall Protection Program and
- At intervals deemed acceptable by the supervisor.

EQUIPMENT INSPECTION

Personal fall arresting equipment (body harness, lanyard) that has been subjected to a significant fall shall be discarded. Equipment shall be maintained in accordance with the manufacturer's guidelines and inspected prior to each use.

The following should be checked:

D-Rings - Cracks, distortion, corrosion, pitting, or excessive wear.

Buckles - Distortion, sharp edges or cracks.

Body Harness - Burns, damage due to chemicals, cuts, abrasion to the material, or broken stitches. One of the best ways to check the material is to hold sections of the material between the hands and bend the material into a U-shape to look for damage.

Keepers and Snap locks - Make sure they operate correctly. Do not rely on the sound of the latches, they must be connected.

Retractable Lines - They should operate smoothly. The rope or cable should not be damaged. A quick pull of the line should cause the line to lock. The retractable lifeline assemblies shall be returned to the factory for recertification as specified by the manufacturer. In most cases, the manufacturer specifies an annual inspection. Check the date on the unit for the last certification.

Lanyard (rope, webbed, or cable) - Look for cuts, frayed parts, damaged fibers, and the condition of connections. There should be no knots in the line. A knot can result in a substantial reduction in strength.

Shock Absorber - Check for ripped stitches, signs of impact loading and connections.

POSTING OF FALL HAZARDS

Fixed (non-transient) fall hazards that are routinely encountered should be posted with signs stating "Fall Protection Required". The signs shall be posted at a location where the fall hazard is first encountered. If there are multiple entry points where the fall hazard is encountered, each location should be posted. Signs shall be posted by the department that has control of the fall hazard.

HEAD PROTECTION

The Fall Protection Program is based on individuals working at least six feet above a lower level. It is presumed that the potential for head injuries exists for any person(s) at the lower level. Hardhats should be donned by all individuals, including visitors, on a job where a fall hazard exists.

PROVISIONS FOR RESCUE

Provisions shall be made for the rescue of employees who have fallen into a net or are suspended by their personal fall arresting equipment. Such provisions shall take the form of ladders, lifts, ropes, combined fall arresting/retrieval body harnesses, etc. If the rescue is likely to endanger the individual who has fallen, or the rescuers, call 911 to initiate the rescue process.

FALL PROTECTION CONSIDERATIONS FOR NEW CONSTRUCTION AND RENOVATIONS

All new construction must provide fall protection in accordance with applicable building codes. One factor that may be overlooked is the provision for fall protection during building maintenance (e.g. roofing). Provisions should be incorporated into the building design by the University or contracted engineers for fall protection anchoring devices. Anchor points and cable or rail systems for fixed ladders are two examples of overlooked features.

DEFINITIONS

Anchorage: means a secure point of attachment for lifelines, lanyards or deceleration devices.

Body Belt (Safety Belt): a strap with a means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

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.

Buckle: any device for holding the body belt or body harness closed around the employee's body.

Connector: a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral part of the system (such as a buckle or D-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

Controlled Access Zone (CAZ): an area which certain work (overhand bricklaying) may take place without the use of guardrail systems, personal fall arrest systems or safety net systems, and access to the zone is controlled.

Dangerous Equipment: equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

Deceleration Device: means 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.

Deceleration Distance: the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Equivalent: alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials, or designs specified in the OSHA Standard.

Failure: load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

Free Fall: the act of falling before a personal fall arrest system begins to apply force to arrest a fall.

Free Fall Distance: the vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

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

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

Infeasible: that it is impossible to perform the construction work using 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. (Infeasibility for any situation will be determined by the Safety Department.)

Lanyard: a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the 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 or 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.

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

Lower Levels: those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

Mechanical Equipment: all motor or human propelled wheeled equipment used for roofing work except wheelbarrows and mopcars.

Opening: a gap or void 30 inches or more high and 18 inches or more wide, in a wall partition, through which employees can fall to a lower level.

Overhand Bricklaying or Related Work: the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work.

NOTE: Brick masons are required to maintain, at a minimum, an 18 inch wall in front of them at all times during the masonry construction work of the wall.

Personal Fall Arrest System: a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998 body belts used for fall arrest if 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.

Rope Grab: a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

Rope: the exterior surface of the top of a building. This does not include floors or formwork which, because a building has not been completed, temporarily becomes the top surface of a building.

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

Snaphook: a connector 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.

Steep Roof: a roof having a slope greater than 4 in 12 (vertical to horizontal).

Toeboard: a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

Unprotected Sides and Edges: any edge or side (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 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 system to protect employees in the area.

Work Area: that portion of a walking/working surface where job duties are being performed.

APPENDIX A

Portable Ladders

For the purposes of this policy, a ladder is defined as an appliance, usually consisting of two side rails joined at regular intervals by crosspieces called steps, rungs, or cleats, on which a person may step in an ascending or descending direction.

It is the responsibility of department managers in those departments where ladders are supplied, to develop a departmental specific program to address the following:

- Only ladders which meet the specifications of the Occupational Safety and Health Administration (OSHA) shall be purchased.
- Ladders shall not be used for purposes other than their designed intent.
- Ladders shall be selected as appropriate for the task at hand. For example, metal ladders should not be used in or around electrical installations.
- Step-ladders shall be equipped with a metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in an open position.
- Ladders shall be inspected prior to use and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Danger, DO NOT OPERATE" (i.e., splintering, loose construction, missing rubber feet).

Non self-supporting ladders shall be erected on a sound base with the base of the ladder a distance from the wall or upper support equal to one-quarter the length of the ladder, and placed to prevent slipping (4' to 1' ratio).

The top of a ladder used to gain access to a roof should extend at least three feet above the point of contact.

This policy contains general guidelines and additional information related to Portable Wood Ladders (29CFR1910.25), Portable Metal Ladders (29CFR1910.26) and Fixed Ladders (29CFR1910.27) require the user to consult the listed OSHA standard.