

Fall Prevention Policy

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13.1 PURPOSE

The major purpose of this procedure is threefold:

- 1) To audit the work area/tasks for potential fall hazards
- 2) To eliminate fall hazards as practical to work tasks
- 3) To implement safe work practices
- 4) To select protective system appropriate for work environment and tasks
- 5) To provide regular training in fall prevention and protection
- 6) To provide for the swift rescue for fallen workers

13.2 GENERAL

When the distance from the walking or working surface to a lower level is more than six (6) feet, the work area and work tasks must be audited for fall hazards. An employee must be protected from falling when working on a surface that has an unprotected side or edge which is 6 feet or more above an adjacent lower level or use the following hierarchy of hazard controls, in order of preference, should be considered:

- Elimination of the fall hazards by bringing the work down to a safe ground level
- Use of passive fall protection systems such as guard rails
- Fall restraint which prevents an employee from reaching a fall hazard
- Fall arrest which utilizes equipment to stop a fall after it occurs

When personal fall arrest equipment is used, it will be provided by T.A. Woods Company. Employees electing to supply their own personal fall protection equipment must first have it inspected and approved by a competent person. Superintendents, foreman, and leadmen are responsible for ensuring that personal fall protection equipment is used in a proper manner.

13.3 RESPONSIBILITY

Job safety planning, training and supervisory enforcement of the fall protection program are essential for its success. Supervisors must identify hazards and provide necessary personal fall protection equipment required for working in fall hazard situations. There should be a Competent Person, as defined by OSHA, which requires the supervisor be capable of identifying existing and predictable hazards in the surroundings or identify working conditions which are hazardous or dangerous to employees and who has the authorization to take prompt corrective measures to eliminate them. The responsibility for the proper use and compliance with the program lies directly with the employees. In general fall protection will be required:

- Unprotected sides and edges
- Leading edges
- Holes
- Formwork and reinforcing steel
- Ramps, runways, other walkways
- Excavations
- Dangerous equipment
- Overhead brick laying and related work
- Roofing work on low-sloped roofs
- Steep roofs
- Precast concrete erection
- Wall opening
- Walking/working surfaces not previously mentioned

13.4 FALL PROTECTION SYSTEMS

One of the following systems shall be in place whenever an employee is exposed to fall hazards six feet or higher.

13.4.1 Guardrail Systems

The use of guardrail systems is considered a passive method of fall protection and is actually the preferred method for eliminating fall hazards.

Guardrails are needed at the edge of work areas 6 feet or more in height to protect employees from falling. This includes the edge of excavations greater than six feet in depth. Guardrail systems need to meet the following criteria:

- Toprail is 42 inches, +/- 3 inches above the walking/working level.
- Midrail is located midway between the top rail and walking/working level
- It is important to remember the working level is where the work is being performed. An employee working on a stepladder next to an edge may raise his/her working surface above the walking surface.
- Both the top and midrails should be constructed of materials at least one-quarter inch in thickness or diameter. If wire rope is used for top rails, it needs to be flagged with a high-visibility material at least every 6 feet and can have not more than 3' of deflection.

- The toprail need to withstand a force of 200 pounds when applied in any downward or outward direction.
- The midrail needs to withstand a force of 150 pounds applied in any downward or outward direction.
- Toeboards are required for all guardrails on elevated walking or working platforms where employees working below are exposed to falling objects. Toeboards must be four inches in height and must be securely fastened.
- The system should be smooth to prevent punctures, lacerations, or snagging of clothing.
- The ends of the toprail shouldn't overhang the terminal posts, except when such overhang does not present a protection hazard.
- When a hoisting area is needed, a chain, gate or removable guardrail section must be placed across the access opening when hoisting operations are not taking place.

13.4.2 Loading Docks or Elevated Storage

Loading docks and other open sided floors such as elevated storage areas greater than 6 feet above ground level must be protected. The approved method of protection is the installation of a standard guardrail system as described in this section. The guardrail may have removable sections to provide access for loading and unloading when access is not required.

13.4.3 Skylights

Skylights are considered an opening when present on a roof. A standard guardrail skylight screen capable of supporting 200 pounds do not require additional

13.4.4 Holes in Walking/Working Area

Holes over 2 inches in diameter must have protection to alleviate tripping and drop hazards to lower levels. This can be in the form of barricades or covers. Covers comply with weight/strength standards. The word "Hole" should be marked on cover. Employees should be instructed to avoid walking across such covers. Equipment and materials should not be stored on hole covers.

13.4.5 Personal Fall Arrest and Restraint Systems

Personnel requiring the use of personal fall protection equipment should use employ the Buddy System or have an observer within proximity to render or summon assistance when and if required.

The three main components to the personal fall arrest system include the personal protection equipment (harness), the connecting device (lanyard) and anchorage point. Prior to trying off to perform work, a means of rescue in the event of a fall must be immediately available. All personal fall arrest system components must meet the requirements of the ANSI Z359 Standards. The system needs to meet the following criteria for each component.

Personal Protective Equipment:

- Full body harnesses are required. The use of body belts is prohibited.
- The attachment point of the body harness is the center D ring on the back.
- Employees must always tie off at or above the D ring of the harness except when using lanyards of 3 feet or less in length.

- Harnesses or lanyards that have been subjected to an impact load must be destroyed.

Connecting Devices:

- The device be a web lanyard, retractable lanyard, rope grab or retractable lifeline
- Only locking snap hooks or carabiners may be used.
- Horizontal lifelines will be designed by a qualified person and installed in accordance with design requirements.
- Lanyards and vertical lifelines need a minimum breaking strength of 5,000 pounds.
- The use of steel lanyards is prohibited
- Lanyards may not be clipped back to itself (around the anchor point) unless specifically designed to do so.
- If vertical lifelines are used, each employee must be attached to a separate lifeline.
- Lifelines need to be protected against being cut or abraded
- Lanyards must be of length to prohibit hitting a lower level or objects beneath the working surface.
- Retractable lanyards are mandated for use in aerial lifts, scissor lifts and he like to eliminate ejection hazards.
- Free fall will be limited to 24 inches or less.

Anchorage

Secure anchorage points are the most critical component when employees must use fall arrest equipment. Buildings may have existing structures (example steel beams that may meet criteria for a secure anchor point). Other work locations and assignments may require the installation of a temporary or permanent anchor. As minimum, the following criteria must be considered for each type of anchor point:

- Structure must be sound and capable of withstanding a 5000-lb. static load.
- Structure/anchor must be easily accessible to avoid fall hazards during hook up.
- Direct tying off around sharp-edged structures can reduce breaking strength by 70%; chafing pads or abrasion resistant straps must be used around sharp edged structures to prevent cutting action against safety lanyards or lifelines.
- Structures used as anchorage points must be at the workers shoulder level or higher to limit free fall to 6 feet or less and to prevent contact with any lower level (except when using self-retractable or 3-foot lanyard)
- Choose structures from anchor points that will prevent swing fall hazards. Potentially dangerous “pendulum” like swing falls can result when a worker moves horizontally away from a fixed anchor point and falls. The arc of the swing produces as much energy as a vertical free fall and the hazard of swinging into an obstruction becomes a major factor. Raising the height of the anchor point can reduce the angle of the arc and the force of the swing. Horizontal lifelines can help maintain the attachment point overhead and limit the fall vertically. A qualified person must design a horizontal lifeline.

Permanent Anchor Requirements

In addition to all the criteria listed above, the following points must be considered:

- Environmental factors and dissimilarity of materials can degrade exposed anchors.
- Compatibility of permanent anchors with employee's fall arrest equipment.
- Permanent anchors should be visually labeled
- Roof anchors must be removed from service and re-certified if subjected to fall arrest forces.

Reusable Temporary Anchors

- Reusable temporary anchors must be installed and used following the manufacturer's installation guidelines.
- Anchors must be compatible with employee's fall arrest equipment.
- Temporary anchors must be removed from service at the completion of the project/task and inspected prior to reuse following the manufacturer's inspection guidelines.
- Temporary anchors must be immediately removed from service and disposed of if subjected to fall arrest forces.

Complete System

- If a fall occurs, the employee should not be able to free fall more than 6 feet nor contact a lower level.
- To ensure this, add the height of the worker, the lanyard length including elongation of 5.5 feet. Using this formula, a six-foot worker would require a tie-off point of at least 16.5 feet above the next lower level.
- A personal fall arrest system subject of impact must be removed from service immediately.
- Personal fall arrest systems need to be inspected prior to each use and damaged or deteriorated components removed from service
- Personal fall arrest systems should not be attached to guardrails or hoists.

13.5 PERSONAL LIFELINE SYSTEMS

When purchasing equipment and raw materials for use in fall protection systems applicable ANSI & ASTM requirements should be met.

13.5.1 Horizontal Lifeline. The horizontal lifeline is a cable rigged between points on the same level that are independent of the work surface. The purpose is to provide a continuous anchorage point for the attachment of lanyards and/or retractable lifelines when no other supporting steel or existing structural anchorage points are available. When using a horizontal lifeline, care must be taken to assure the following factors:

- 1) wire rope lifelines must be at least one-half inch in diameter and be capable of supporting a 5,000-pound load per person attached to the lifeline;
- 2) anchorage points must be able to support 5,000 pounds per attached employee;
- 3) a minimum 2:1 safety factor is required for every component part of the system;
- 4) the cable must have an adequate degree of sag, with the necessary shock absorption and support intervals calculated to achieve a designed strength of at least twice the force for a dynamic fall for the anticipated number of workers who will use the line.

Careful engineering is required for the use of horizontal lifelines.

13.5.2 Vertical Lifeline. A vertical lifeline is a line which is attached to a structural anchorage point and to which a lanyard is attached using a grabbing device. The line must have a minimum breaking strength of 5,000 pounds. When vertical lifelines are used, only one employee can be attached to the line.

13.5.3 Body Support. Only full body harnesses may be used with a personal fall protection system. When using personal fall positioning, the full body harness shall incorporate a D-ring at the waist. The body harness should be a nylon or web belt system designed to spread the shock and load of a fall over the shoulders, thighs, and seat area. When using the body harness for arrest or restraint, the lanyard or line must be attached to the D-ring positioned on the upper back straps, where it will also provide a practical means of raising or lowering the wearer in a rescue operation. A body harness and lanyard must be worn at all times while erecting or dismantling scaffold.

13.5.4 Rope Grab Device. This is a grabbing device that connects the worker's safety harness or lanyard to a vertical lifeline and is designed to arrest a fall mechanically, bringing the worker to a complete stop.

13.5.5 Lanyard: Lanyards used by T.A. Woods Company must incorporate a shock absorber. As with all other components of a personal fall protection system, the lanyard must have a minimum breaking strength of 5,000 pounds. It is used to connect a worker's safety harness, to either an anchorage point or rope grabbing

device on a vertical lifeline. The shock-absorbing end of the lanyard must be connected to the D-ring on the harness.

When stopping a fall, personal fall arrest systems must limit the maximum arresting force on an employee to 1,800 pounds when used with a body harness.

NOTE: The practice of looping a lanyard over a pipe or piece of structural steel and then hooking it back onto itself is prohibited. Use the proper connecting device when attaching your lanyard to your anchorage point. Most manufacturers of personal fall arrest equipment have items available to use in securing your lanyard to an anchorage point. These items include, but are not limited to hooks, cables and straps in varying sizes and lengths, which are specifically designed for this purpose. Looping is permissible if the manufacturer designates the lanyard as such.

13.6 RESCUE PLANNING

When a project requires the use of fall protection systems for employees, pre-planning of the project must include methods for the prompt rescue of employees in the event of a fall. This may include such items as the assurance that the employees can rescue themselves, a retrieval system that can be immediately erected to assist employees in ascending or descending, or a nearby mobile unit with a bucket that can be extended for the employees to use. Rescue plans must be planned in advance and periodically practiced. All accidents and serious incidents should be investigated, implementing changes to the fall protection plan as necessary.

13.7 EMPLOYEE TRAINING

Since falls are a major source of job site injury, instructions about the proper use of fall protection equipment and procedures must be an important part of employee training. Comprehensive and frequently repeated training sessions (without unnecessary exposure to heights) can help to overcome the panic that may confuse an employee during an emergency situation. Emergency fall protection must be safe, reliable, visible and simple to operate.

13.8 INSPECTION AND MAINTENANCE

Prior to the initial use, a competent person, along with the new user, must complete a thorough inspection of the fall protection system, and to ensure adequate knowledge about the proper use and care of the equipment and understanding of the program. Each user of the fall protection system must be trained to inspect all components of the system prior to each use. The employee must understand what to look for during the inspection and what constitutes damaged equipment. If any component is found damaged, the employee must know to tag the equipment as damaged, take it out of service, and have it destroyed.

13.9 INSPECTION PROCEDURES

NOTE: Always inspect all of your fall arrest equipment prior to each use.

13.9.1 Full Body Harness and Lanyard Inspection Procedures:

- a. Inspect harness hardware (buckles, D-rings, keepers, etc.). It is not allowed for these items to be damaged, broken, distorted, or have any sharp edges, burrs, cracks, worn parts, or corrosion. Check any PVC coated hardware for cuts, rips, tears, holes, etc. in the coating. Make sure buckles work freely.
- b. Inspect webbing. Material cannot be frayed, cut, or have any broken fibers. Check for tears, abrasions, mold, burns, discoloration, etc. Inspect stitching for pulled out or cut stitches. Inspect all labels—information on them should be legible.
- c. If the inspection reveals a defective condition, tag the harness, remove the harness from service and have it destroyed.

13.9.2 Shock Absorbing Lanyard Inspection Procedures:

- a. Inspect all hardware components (snap hooks, adjusters, swedges, thimbles, etc.). These items cannot be damaged, distorted, broken, or have any sharp edges, burrs, worn parts, cracks, or corrosion. Make sure the connecting hooks are the double locking type and work properly.
- b. Check the webbing and stitching. The material cannot be frayed, cut or have any broken fibers. Check for tears, abrasions, molds, burns, discoloration, etc. Inspect stitching for pulled out or cut stitches. Inspect all labels—information must be legible.
- c. Inspect the shock absorber to determine if it has been activated. There should be no evidence of elongation. Make sure the shock absorber protective cover is in place, secure and not damaged.
- d. If the inspection reveals a defective condition, tag the lanyard, remove the lanyard from service and have it destroyed.

13.10 CARE OF EQUIPMENT

Always follow the manufacturer's guidelines for cleaning, drying and storing of this equipment. Failure to follow the manufacturer's guidelines in caring for this equipment may cause damage to this equipment, making it unsafe to use.

Harnesses and lanyards should be stored in an orderly manner. A space in the site storage facility should be designated for storing harnesses and lanyards. Both should be stored by hanging on hooks that will not damage components. Neither should be stored on the floor, in boxes, or toolboxes. Supervisors are responsible for the correct storage of harnesses and lanyards.