Section 16B. Fall Protection

Falls are the second leading cause of death in the workplace.

Factors contributing to falling incidents:

1. Personal factors
   - Lack of concentration.
   - Use of medication.
   - Poor housekeeping.
   - Illness.
   - Improper use of tools and equipment.

2. Environmental factors
   - Wet or slippery surfaces.
   - Poor lighting.
   - Electrical hazards.
   - Changes in the weather.
   - Moving mechanical parts that have not been locked or tagged out.
   - Force of gravity.

At what level is fall protection required?

1. General industry: any open-sided walkway, ramp, etc. (except loading ramps) that is four feet above the next level must have an engineering control such as a guard rail or another approved method of fall protection.
2. Construction activities: requires engineering control or a personal fall protection system at the ten feet level or above. Scaffolds wider than 45” in all dimensions do not need guardrails from heights of four to ten feet.

Fall protection at the TFREC is divided into two categories:

1. Fall restraint.
   a. Guardrails
      - Have a smooth surfaced top rail at 39-45” height.
      - Sufficient strength to withstand at least 200 lbs. top rail pressure with minimum deflection.
      - A midrail.
      - A standard toeboard.
      - No overhang of rail ends over terminal posts except where such overhang does not constitute a projection hazard.
   b. Safety belt or harness
      - Securely rigged to restraint lines.
      - Harness/belt and lanyard capable of withstanding tensile load of 4000 lb.
      - Rope grabs must be approved and used in accordance with manufacturer’s specifications.
• Anchorage capable of supporting four times the intended load.
• Restrains employee from reaching the sides or edges of the working surface.

c. Warning line system
• Warning line must be erected around all sides of the working area.
• Must be at least six feet from the roof edge.
• Can only be used on roof pitches of 3/12 and less.
• Must be supplemented with personal fall protection system or safety monitor if employees must be in area between roof edge and warning line. If safety monitor is not used, then all workers positioned outside of the warning line must be anchored to a fall restraint or fall protection system.

d. Safety monitor system
• Can be used in conjunction with warning lines during work on low pitch roofs.
• Shall not be used when adverse weather creates additional hazards.

Safety monitors shall:
• Be trained in safety monitor and warning line systems.
• Be a competent person.
• Have authority to stop hazardous work.
• Be instantly distinguishable.
• Engage in no other duties.
• Be positioned with clear view and communications.
• Supervise no more than eight persons at a time.
• Must warn employees of fall hazards and also warn them when they are acting in an unsafe manner.

2. Fall arrest system

a. A fall arrest system can be:
• Full body harness with shock-absorbing lanyard, lifeline, rope grab and a 5000 lb. anchor.
• A safety net.
• A catch platform.

b. Personal fall protection systems
• Shall limit maximum arresting force to 1800 lb. when used with a body harness.
• Be rigged so that an employee cannot free fall more than six feet or contact any lower level.
• Be rigged so that an employee does not pendulum into immovable objects.
• Shall bring an employee to a complete stop and limit maximum deceleration distance to 3.5 feet.
• Shall have sufficient strength to withstand twice the potential energy impact of an employee free falling six feet, or the free fall distance permitted by the system, whichever is less.
c. Anchorage
- Must be capable of supporting 5000 lb. per worker.
- Can be permanently or temporarily installed.
- Must be independent of any anchorage being used to support or suspend platforms.
- Must be rigged so that a falling employee does not pendulum into immovable objects. For this reason, it is advisable to use a dual anchorage. If both ropes are kept taut with a dual anchorage system, the employee will not experience a pendulum swing.
- When tying off to structural steel, a beam strap should be used to minimize the chances of cutting or abrading the lanyard.

d. Lanyard
- Must have a minimum breaking strength of 5000 lb.
- Should be made of synthetic fiber to decrease deceleration forces.
- Must be attached to the anchorage point in a way that does not reduce its required strength (such as choker-hitched to itself).
- Must be attached to the anchorage with a locking snap hook.
- Designed to absorb up to 80% of the arresting force.

e. Body harness
- Distributes the impact throughout the body (hips, buttocks, chest, etc.).
- Keeps the body suspended upright while waiting for rescue.
- Attaches to the lanyard at the D-ring in the center of the back near shoulder level or above the head.
- Is used only for employee protection and not for hoisting materials.

f. Rope grab
- Is a deceleration device that travels on a vertical lifeline attached to an anchorage point.
- It will automatically engage the lifeline and lock to arrest a fall.
- Must be used according to the manufacturer’s recommendations.

g. Lifeline
- Must be protected from being cut or abraded.
- No more than one employee should be attached to each vertical lifeline
- Both vertical and horizontal lifelines shall have a minimum tensile strength of 5000 lb.

Specific fall protection work plans are required on jobs where fall hazards of ten feet or more exist.

Each plan shall:
- Identify all fall hazards in the work area.
- Describe the method of fall arrest or fall restraint to be provided.
- Describe the correct procedures for the assembly, maintenance, inspection and disassembly of the fall protection to be used.
- Describe the method for the handling, storing, and securing of tools and materials.
• Describe the method of providing overhead protection for workers (and public) who may be in, or pass through, the area below the work site.
• Describe the method for prompt, safe removal of injured workers.
• Be available on the job site for inspection by the Department of Labor and Industries
• Before employees are permitted to enter an area where fall hazards exist, they must be trained in all aspects of the specific fall protection work plan for that area.

Care and inspection of fall protection equipment
• Fall arrest and fall restraint systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.
• Fiber rope should have no knots, frayed areas or broken fibers, loss of diameter (a loss of diameter indicates breaks in inner fibers) or accumulated dirt or grease.
• Wire rope should have no broken wires, kinks, flattened or shiny areas (flat spots indicate excessive wear or damage) or loss of diameter (loss of diameter indicates a broken core).
• Webbing should have no broken threads or stitches, brownish or hard shiny spots which are indicative of chemical or heat damage, mildew or accumulated dirt or grease.
• Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and declared suitable for use by the manufacturer of the equipment.
• Keep the fall protection equipment in the best condition possible. Correct cleaning and storage will prolong its life.
• Dirt and grease that work their way into webbing and rope create abrasion from within and can result in broken fibers and strands.
• Clean webbing and fiber rope by washing with mild soap and water. Do not use solvents, bleach or strong detergents.
• The equipment should be dried before it is used by allowing it to hang in a clean area. Do not hang it in the sunlight or dry it in a dryer.

Rescue
A first aid trained person should be on site for each job requiring fall protection.
For emergencies, dial 911. The fire department has equipment that can be used to remove an injured person from the job site.
Washington State University  
Department of the Physical Plant  
Fall Protection Work Plan

Ver. 3/97

**Instructions**: This plan document is to be completed for each worksite where employees are assigned and a fall hazard(s) of 10 feet or more exists. This document must be completed by a competent person who has an understanding of WISHA fall protection requirements, the fall protection systems available to WSU, and has authority to take corrective action to eliminate employee exposure to fall hazards. A copy of this plan must be available on the worksite for the duration of the project while the fall hazard(s) exists.

**Worksite Information**

Date prepared: ___/___/___  Worksite location: _____________________________________

Competent person to supervise the plan: ____________________________________________

Plan document location at this worksite: ____________________________________________

**Fall Hazards** (Identify all fall hazards in this worksite):

________________________________________________________________________________________

**Method of fall restraint or arrest** (check the method(s) to be used):

- [ ] Standard guardrail
- [ ] Horizontal lifeline
- [ ] Secured to existing structure
- [ ] Shock absorbing lanyard
- [ ] Scaffold w/guardrail
- [ ] Warning line & safety monitor
- [ ] Double lanyard system
- [ ] Full body harness
- [ ] Tie-off point capable of 5000 lb. load per person (Specify)______________________
- [ ] Restraint line
- [ ] Scissors lift
- [ ] Boom lift
- [ ] Fork lift basket
- [ ] Catch platform
- [ ] Other (specify)

**Procedures for the assembly, maintenance, inspection and disassembly of the fall protection system to be used.** Describe the procedures (if additional space is required, complete on another sheet and attach to this form):

________________________________________________________________________________________
Procedures for the handling, storage and securing of tools and materials and for providing overhead protection for workers and other pedestrians who may be in or pass through the area below the worksite. Describe the procedures:

Emergencies and Injuries

First-aid trained employee(s) on site:

Name _______________________________ Title ___________________________________

Name _______________________________ Title ___________________________________

First aid kit location(s): _________________________________________________________

Emergency medical services will be provided by: Chelan County Fire District

Phone number: **911** Location of nearest telephone: ____________________________

If a crew member is injured at elevation, the supervisor will evaluate the employee’s condition and administer first aid. Emergency services will be called as needed. If an injured employee cannot return to ground level, the employee will be brought down to a lower level by emergency services. The following equipment is available on site to facilitate lowering the injured worker:
### Physical Plant
### FALL PROTECTION WORK PLAN
### On-site Employee Safety Training Checklist

**The following topics were covered:**
- Nature of all fall hazards in the work area.
- The method(s) of fall arrest or fall restraint to be provided.
- The correct procedures for the assembly, maintenance, inspection and disassembly of the fall protection systems to be used.
- The correct procedures for the handling, storage and securing of tools and materials.
- The method of providing overhead protection for workers (or public) who may be in or pass through the area below the worksite.
- The method for prompt, safe removal of injured workers.

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<th>Employee Name (printed)</th>
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**Job supervisor’s signature**

Title

Date

The job supervisor whose name appears above certifies that the above employees have been trained in the topics required by WAC 296-155-24503 (4)(b).