FALL PROTECTION SAFETY PROGRAM

Origination Date
April 2018

West Virginia University P.O. Box 6551 Morgantown, WV 26506 Office: (304)293-3792 Fax: (304)293-7257 http://ehs.wvu.edu

Table of Contents

1.0 Purpose ……1
2.0 Scope……1
3.0 Definitions……1
4.0 Roles and Responsibilities……4
4.1 Environmental Health and Safety……4
4.2 Safety and Health Extension……5
4.3 WVU Management……5
4.4 Project Manager……5
4.5 Competent Persons……6
4.6 Qualified Personnel for Fall Protection……6
5.0 Training……6
5.1 Training Requirements……6
5.2 Retraining……7
6.0 Procedures……7
6.1 Falls from Elevation……7
6.2 Accessing work areas at elevations of 4ft. or more……8
6.3 General Industry Work that is both temporary & infrequent, & only on Low Sloped Roofs….. 8
6.4 General Industry Work that is Neither Temporary, nor Infrequent& only on Low Sloped Roofs……9
6.5 Construction Work on Low Sloped Roofs……9
6.6 Steep Sloped Roofs……10
6.7 Warning Line Systems used with designated areas……10
6.8 Skylights……10
6.9 Access Hatches……11
6.10 Fixed Ladders……11
6.11 Openings……11
6.12 Repair Pits, Service Pits and Assemble Pits Less than 10 Feet in Depth……12
6.13 Dockboards……12
6.14 Runways and Similar Walkways……12
6.15 Dangerous Equipment……12
6.16 Outdoor Advertising……13
6.17 Stairways……13
6.18 Window Washing……13
6.19 Scaffolds and Rope Descent Systems……13
6.20 Walking-Working Surfaces Not otherwise Addressed……14
6.21 Protection from Falling Objects……14
6.22 Fall Protection Equipment……14
6.23 Retrieval Systems……18
6.24 Rescue Plan…… 18
7.0 Recordkeeping……18
8.0 Disciplinary Actions…… 18
9.0 References…… 19

10.0 Program Review…… 19
11.0 Program Revisions…… 19
12.0 Appendices…… 19
12.1 Appendix A: WVU Fall Protection Guide for Rooftop Work Only..…… 20
12.2 Appendix B: Fall protection Design Guide…… 21

1. **Purpose**

This document establishes design guidance, procedures, objectives, engineering, and administrative requirements for West Virginia University's Fall Protection Program. This program has been developed to reduce the risk of physical injury or property damage in areas with a fall from elevation hazard. The program is to comply with all applicable Occupational Safety and Health Administration's (OSHA) standards.

2. **Scope**

WVU must ensure that each employee on a walking-working surface with an unprotected side or edge that is four feet or more above a lower level is protected from falling. WVU shall provide protection for each employee exposed to falls and falling object hazards.

This program does not apply to portable ladders, scaffolds, fall hazards presented by the exposed perimeters of entertainment stages, and the exposed perimeter of rail-station platforms, powered platforms, telecommunications, and electric power generation, transmission, and distribution work, steel erection, or aerial platform lifts. Information on these topics can be found in their respected WVU program.

Window washing from rope decent systems is prohibited by WVU employees. If this task is required, please contact WVU Environmental Health and Safety.

3. **Definitions**

Access: a way or means of approach.

Anchor, including temporary anchorage: a secure point of attachment for equipment such as lifelines, lanyards, deceleration devices, and rope descent systems.

Authorized: an employee who the employer assigns to perform a specific type of duty, or allows in a specific location or area.

Cage: enclosure mounted on the side rails of a fixed ladder or fastened to a structure behind the fixed ladder that is designed to surround the climbing space of the ladder. A cage also is called a "cage guard" or "basket guard."

Competent person: one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to control or eliminate them.

Construction: an activity that is new construction, alteration, improvement, and/or repair, including painting and decorating.

Designated Area: a distinct portion of a walking-working surface delineated by a warning line in which employees may perform work without additional fall protection

Dockboard: means a portable or fixed device that spans a gap or compensates for a difference in elevation between a loading platform and a transport vehicle. Dockboards include, but are not limited to, bridge plates, dock plates, and dock levelers.

Divisional Campus: the WVU institutions and related entities located outside of the main WVU campus in Morgantown.

EHS: Environmental Health and Safety

Fall hazard: any condition on a walking-working surface that exposes an employee to a risk of harm from a fall on the same level or to a lower level.

Fall protection: equipment, devices, or systems that prevents an employee from falling from an elevation or mitigates the effect of such a fall.

Fixed ladder: a ladder with rails or individual rungs that is permanently attached to a structure, building, or equipment. Fixed ladders include individual-rung ladders, but not ship stairs, step bolts, or manhole steps.

Frequent: Tasks performed or repeated on a daily, routine, or regular basis.

General Industry: Those duties not classified as agriculture, construction or maritime.

Guardrail system, including temporary guardrail system: a barrier erected along an unprotected or exposed side, edge, or other area of a walking-working surface to prevent employees from falling to a lower level.

Hole: a gap or open space in a floor, roof, horizontal walking-working surface, or similar surface that is at least 2 inches (5 cm) in its least dimension.

Infrequent: A task or job that is performed only on occasion, when needed (e.g. equipment breakdown), on an occasional basis, or at sporadic or irregular intervals.

Ladder safety system: a system designed to eliminate or reduce the possibility of falling from a ladder. A ladder safety system usually consists of a carrier, safety sleeve, lanyard, connectors, and body harness. Cages and wells are not ladder safety systems.

Low-sloped roof: a roof that has a slope less than or equal to a ratio of 4 in 12 (vertical to horizontal).

Lower level: surface or area to which an employee could fall. Such surfaces or areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, equipment, and similar surfaces and structures, or portions thereof.

Opening: a gap or open space in a wall, partition, vertical walking-working surface, or similar surface that is at least 30 inches (76 cm) high and at least 18 inches (46 cm) wide, through which an employee can fall to a lower level.

Parapet: a permanent structure that provides a low protective wall along the edge of a roof, bridge, or balcony.

Personal fall arrest system (PFAS): a system used to arrest an employee in a fall from a walking-working surface. It consists of a body harness, anchor, including temporary anchorage, and connector. The means of connection may include a lanyard, deceleration device, lifeline, or a suitable combination of these.

Personal fall protection system: a system (including all components) an employer uses to provide protection from falling or to safely arrest an employee's fall if one occurs.

Personal Travel Restraint System: a combination of an anchor, including temporary anchorage, including temporary anchorage connector, lanyard (or other means of connection), and body support that an employer uses to eliminate the possibility of an employee going over the edge of a walking-working surface.

Project Manager: Persons having the following titles: researcher, project manager, planner, designers, managers, or persons otherwise responsible and required to ensure for evaluation, identification and installation of fall protection for new, renovations and special projects requiring fall protection

Positioning system: (work-positioning system) system of equipment and connectors that, when used with a body harness or body belt, allows an employee to be supported on an elevated vertical surface, such as a wall or window sill, and work with both hands free. Positioning systems also are called "positioning system devices" and "work-positioning equipment."

Qualified person: one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Safety Net System: A net system that meets the requirements set forth in 29 CFR 1926.502(c) intended to be used as fall protection. Safety nets shall only be used if the workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical

SHE: Safety & Health Extension

Ship stair (ship ladder): a stairway that is equipped with treads, stair rails, and open risers, and has a slope that is between 50 and 70 degrees from the horizontal.

Stanchion: an upright bar, post, or frame forming a support or barrier.

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

Temporary: The duration of the task the worker performs is brief or short. (i.e. the duration of the task is shorter than the time it would take to set up conventional fall protection.) The task must also be able to be completed at one time rather than repeatedly climbing up or returning to the roof or requiring more than one work shift to complete.

Through Ladder: type of fixed ladder that allows the employee to step through the side rails at the top of the ladder to reach a walking working surface.

Travel restraint system: a combination of an anchor, including temporary anchorage, anchor, including temporary anchorage connector, lanyard (or other means of connection), and body support that an employer uses to eliminate the possibility of an employee going over the edge of a walking-working surface.

Unprotected sides and edges: any side or edge of a walking-working surface (except at entrances and other points of access) where there is no wall, guardrail system, including temporary guardrail system, or stair rail system to protect an employee from falling to a lower level.

Walking-working surface: any horizontal or vertical surface on or through which an employee walks, works, or gains access to a work area or workplace location.

Warning line: a barrier erected to warn employees that they are approaching an unprotected side or edge, or which designates an area in which work may take place without the use of other means of fall protection

WVU Management: WVU employees who act in a supervisory capacity.

4. Roles and Responsibilities

The Fall Protection Program roles and responsibilities are identified in the following sections and play an important role in safety at WVU. The success of the program relies on the WVU employees adhering to and following program requirements.

4.1. Environmental Health and Safety (EHS)

- Develop, maintain, and revise, as needed, the Fall Protection Program at WVU.
- Provide guidance to WVU employees concerning regulatory requirements regarding Fall Protection safety.
- Provide guidance to departments on Fall Protection training requirements, including PDC.
- Provide Fall Protection training outline and curriculum.
- Provide formal (classroom) Fall Protection Training
- Maintain Fall Protection training records.
- Conduct periodic audits for program compliance.
- Audit the Fall Protection Program as needed.

4.2. Safety and Health Extensions (SHE):

- Assist EHS in the development and revisions of the Fall Protection program.
- Develop curriculum and conduct periodic formal (classroom) fall protection training.
- Provide EHS with training documentation, including: outlines, sign-in sheets, and training materials.
- Upon request, provide guidance to WVU employees concerning fall protection safety questions.
- Upon request, identify potential existing structures for an engineering evaluation to determine fall protection capacity.
- Inform EHS regarding any questions pertaining to Fall Protection safety.
- Participate in the WVU design review process.

4.3. WVU Management:

- Ensure all employees comply with the requirements established in the WVU Fall Protection Program.
- Designate and empower individuals who will act as competent person and/or qualified persons who will be responsible for the preparation and implementation of the Fall Protection Program.
- Follow and enforce the Fall Protection Safety Program
- Provide resources for implementing corrective actions for fall hazards.
- Provide proper personal protective equipment (PPE).
- Ensure employees attend appropriate training.
- Attend fall protection training
- Contact EHS with fall protection questions and concerns, to include unsafe conditions.
- Responsible for establishing and maintaining a standard operating procedure for inspection, use, maintenance and recertification protocol for personal fall protection equipment per manufacturer's recommendations.
- Responsible for establishing and maintaining a standard operating procedure for evaluation, certification, and documentation of potential anchor, including temporary anchorage points per manufacturer's recommendations.
- Assure a site-specific rescue plan for employees.
- Project managers and/or hiring officials shall act as liaisons to ensure contractors follow OSHA's regulations for Fall Protection.

4.4. Project Manager:

- Maintain the Design Guidelines requiring projects be designed according to the West Virginia University Fall Protection Program and current International Building Code. Designs shall also meet additional local, state, or federal codes and regulations.
- Ensure permanent fall protection controls are established on all new buildings or renovations.
- Provide communication to require contractors to follow any OSHA regulations.
- Assure anchor, including temporary anchor points are evaluated, identified, labeled, and certified.
    - Potential anchor, including temporary anchors must be evaluated by a qualified person.
- Identify and label certified engineered fall protection tie-off locations.
- Obtain and manage certification documents for all fall protection anchor, including temporary anchors, lifeline systems, guardrails, and engineered tie-off locations.
- Follow fall protection building guidelines established by this program (See Appendix B: WVU Fall Protection Design Guideline).
- Ensure contractors follow safe scaffold and rope descent systems (see 6.19).

4.5. Competent Person:

- Only a WVU competent person can access elevations of 4ft or more requiring personal fall protection systems.
- Be designated by WVU Management.
- Attend required fall protection training.
- Report unsafe conditions.
- Inspect equipment prior to each use.
- Follow guidelines and practices outlined in the WVU Fall Protection Program.
- Analyze the elevated work area and determine appropriate fall prevention and/or protection means.
- Conduct a pre-work meeting to establish site-specific safety procedures prior to each job, to include site specific work rules and rescue plans.
- Develop a rescue plan prior to the start of work and use as applicable.
- Inspect areas to be accessed for fall hazard conditions.
- Assure WVU employees, under their responsibility, comply with contents established in the WVU Fall Protection Safety Program.
- Remove from service any damaged or defective equipment report to WVU Management.
- In the event of a fall, remove all equipment involved from service and report to WVU Management.
- Site's competent person to ensure required plans and resources are available (see 6.24).

4.6. Qualified Personnel for Fall Protection

- Inspect and maintain fall protection equipment.
- Develop and maintain recertification protocols.

5. Training

5.1. Training Requirements

All WVU employees who use personal fall arrest systems must be provided fall protection training before exposure to a fall hazard (1910.30(a)(1)).

Fall protection training is composed of both classroom and practical (hands-on) training. Training will be organized and scheduled by EHS. SHE will provide instructors for the training. The training will consist of:

- The purpose, use, and location of the WVU Fall Protection Program
- Pre-work meeting components
- Responsibilities associated with problems or malfunctions affecting fall protection

- Nature of fall hazards and methods for control.
- Procedures for erecting, maintaining, dissembling, and inspecting fall protection systems
- The use, operation, and limitations of personal protective equipment and fall protection systems, including: proper hook-off, anchor, including temporary anchoring, and tie-off techniques, methods of use, and visual inspections of equipment.
- Estimating free fall distance, including determining elongation and declaration distance.
- Hands-on use of various fall protection equipment, including, not but limited to a full body harness, lanyard, retractable, and rope grab.
- Rescue plan

5.2. Retraining

Retraining will be conducted to provide employees the knowledge and skill needed to work safely. The training will be conducted when:

- WVU Management, EHS, or SHE notice a deficiency in skill and/or knowledge.
- WVU Management, EHS, or SHE notice a knowledge gap with employees.
- Changes in the workplace make previous training inadequate.
- New equipment is introduced.
- Changes in regulation or policy.
- Or otherwise designated by WVU Management or EHS.

6.0. Procedures

The following procedures and requirements are used to reduce risk for employees working at heights.

6.1. Falls from Elevation

Fall hazards from elevation include, but are not limited to: unprotected sides and edges, roofs, excavations, skylights, floor holes, wall openings, hatches, and other walking or working surfaces where personnel can possibly fall four feet or more to a lower level.

Employees shall alert management and EHS to potential fall hazards not already identified and controlled. The following are examples of fall hazards which require protection:

- Open sided floors, platforms, and runways four feet or more in height above a lower surface.
- Open sided floors, ramps, walkways, etc. that are adjacent to or above dangerous operations must be guarded regardless of height.
- Wall openings from where there is a drop of four feet or more above a lower surface.
- Openings four feet or more above a lower surface where a portion of the body is leaning over or through to perform work.
- Hatchways and chutes.
- Skylights

- Scaffolds ten feet or higher (Exempt from WVU Fall Protection Program-please see the WVU Scaffold Program and 29 CFR 1926)
- Aerial Lifts (Exempt from WVU Fall Protection Program- please see WVU Aerial Platform Lift Program)

Depending upon task, there are various options available to protect employees (Appendix A):

6.2. Accessing work areas at elevations of 4ft. or more

Employees must take the most direct path to the work area that maintains maximum distances from all edges.
If fall protection is installed and available, it must be utilized to access the work area.

6.3. General Industry Work that is both <u>temporary</u> and <u>infrequent,</u> and only on <u>Low Sloped</u> Roofs:

General Industry Work that is both temporary and infrequent conducted on low sloped roofs (with a pitch of 4 on 12 or less) is divided into three work areas as follows (See Appendix A: WVU Fall Protection Guide):

*A. When work is performed **<u>less than 6ft. from edge of roof:</u>***

Where work is performed less than 6 feet from the roof's edge or opening in the roof deck, the competent person(s) must be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system or personal fall arrest system.

All work performed less than 15 ft. from the roof's edge or openings in the roof deck require a minimum of 2 employees.

*B. Work is performed at **<u>least 6 ft. but less than 15 ft. from edge of roof:</u>***

Where work is performed at least 6 feet but less than 15 feet from the roof's edge or opening in the roof deck, the competent person(s) must be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system, personal fall arrest system, or a designated area when performing work that is both temporary and infrequent.

In this area, employees may utilize the designated area option by erecting a warning line system to visually indicate when employees are within 6 ft. of a fall hazard. Employees shall work behind the warning line without a guardrail or compliant parapet wall system, safety net system, travel restraint system or personal fall arrest system, given they stay within the designated area.

All work performed less than 15 ft. from the roof's edge or openings in the roof deck require a minimum of 2 employees.

*C. When work is performed **15 ft. or more from the roof edge:***

Where work is performed 15 feet or more from the roof's edge or opening in the roof deck, the competent person(s) must be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system, personal fall arrest system, or a designated area with warning line system. (See 6.6 Warning Line Systems used with designated areas)

However, the competent person(s) are not required to utilize any fall protection provided the work is both temporary and infrequent, and there is a site specific, predeveloped work rule in place and enforced prohibiting employees from going within 15 feet of the edge of the roof or opening without using conventional fall protection systems.

6.4. General Industry Work that is Neither Temporary, nor Infrequent and only on Low Sloped Roofs:

General Industry Work that is neither temporary, nor infrequent, conducted on low sloped roofs (with a pitch of 4 on 12 or less) is divided into two work areas as follows:

Work performed within 15 ft. from the roof edge:

Where work is performed within 15 ft. from the roof's edge or opening in the roof deck, the competent person(s) must be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system or personal fall arrest system.

All work performed less than 15 ft. from the roof's edge or openings in the roof deck require a minimum of 2 employees.

Work performed 15 ft. or more from the roof edge:

Where work is performed 15 feet or more from the roof's edge or opening in the roof deck, the competent person(s) must be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system, personal fall arrest system, or a designated area with warning line system. (See 6.7 Warning Line Systems used with designated areas)

6.5. Construction Work on Low Sloped Roofs:

Work performed within 15 ft. from the roof edge:

Where work is performed within 15 ft. from the roof's edge or opening in the roof deck, the competent persons must be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system or personal fall arrest system.

All work performed less than 15 ft. from the roof's edge or openings in the roof deck require a minimum of 2 employees.

Work performed 15 ft. or more from the roof edge:

Where work is performed 15 feet or more from the roof's edge or opening in the roof deck, the competent person(s) must be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system, personal fall arrest system, or a designated area with warning line system. (See 6.7 Warning Line Systems used with designated areas).

6.6. Steep Sloped Roofs:

All work performed on steep sloped roof, regardless of construction or general industry work, require the competent persons be protected from fall hazards by either a guardrail or compliant parapet wall system, safety net system, travel restraint system or personal fall arrest system.

All work on steep sloped roofs require a minimum of 2 employees.

6.7. Warning Line Systems used with designated areas:

When applicable, a competent person(s) shall install and utilize an approved warning line system prior to beginning work. The approved warning line shall be constructed as follows:

- Shall be constructed with ropes, wires, tape or chains, and have a minimum breaking strength of 500-lb pounds.
- The line must be installed in such a manner that its lowest point (including sag) is no less than 34 inches or more than 39 inches above the walking –working surface.
- Is supported in such a manner that pulling on one section of the line will not result in slack being taken up in adjacent sections causing the line to fall below the limits set above.
- The warning line shall be clearly visible from 25 feet and anywhere within the designated area.
- Shall be erected as close to the work area as the work task permits.
- Is erected not less than 6 feet from the roof edge for work that is both temporary and infrequent, or not less than 15 feet from roof edge for other work that is neither temporary nor infrequent.

6.8. Skylights:

Skylights are considered a hole in the roof and employees must protect against a fall using an engineered cover, guardrail, PFAS, or travel restraint systems.

6.9. Access Hatches:

Each employee must be protected from falling through a hatchway and chute-floor by:

- A hinged floor-hole cover, and a fixed guardrail system, including temporary guardrail system that leaves only one exposed side. When the hole is not in use, the cover must remain closed or a removable or swing gate guardrail system, including temporary guardrail system is provided on the exposed sides;
- A removable or swing gate guardrail system, including temporary guardrail system and toeboards on not more than two sides of the hole and a fixed guardrail on the other exposed sides. The removable guardrail system, including temporary guardrail system must be kept in place with the hole is not in use; or
- A guardrail system, including temporary guardrail system or a travel restraint system when a work operation necessitates passing material through a hatchway or chute floor hole.
- If the hatch is within 6 feet of the roof's edge, a railing system is required between the hatch and edge of roof.

6.10. Fixed Ladders:

- All new and replaced fixed ladders extending 24 ft. or more will be equipped with a personal fall arrest system or ladder safety system.
- All existing fixed ladders extending 24 ft. or more will be equipped with a personal fall arrest system, ladder safety system, cage, or well. Fixed ladders with a cage or well must be offset from adjacent sections and have landing platforms provided at maximum intervals of 50 ft.
    - By November 18, 2036, all fixed ladders will be equipped with a personal fall arrest system or a ladder safety system.
- If an existing fixed ladder is replaced, it must be equipped with either a personal fall arrest system or ladder safety system.
- The personal fall arrest system or ladder safety system will provide protection throughout the entire vertical distance of the ladder, including all ladder sections and will also provide rest platforms at maximum intervals of 30 ft.

6.11 Openings.

WVU must ensure that each employee on a walking-working surface near an opening, including one with a chute attached, where the inside bottom edge of the opening is less than 39 inches above the walking-working surface and the outside bottom edge of the opening is 4 feet or more above a lower level is protected from falling by the use of:

- Guardrail system, including temporary guardrail systems;
- Safety net systems;
- Travel restrain systems; or
- Personal fall arrest systems.

6.12. Repair pits, service pits, and assembly pits less than 10 feet in depth.

The use of a fall protection system is not required for repair pit, service pit, or assembly pit that is less than 10 feet deep, provided WVU;

- Limits access within 6 feet of the edge of the pit to authorized employees trained in accordance to this policy;
- Applies floor markings at least 6 feet from the edge of the pit in colors that contrast with the surrounding area; or places a warning line and stanchion system at least 6 feet from the edge of the pit.
- When two or more pits in a common area are not more than 15 feet apart, WVU may comply by placing contracting floor markings at least 6 feet from the pit edge around the entire area of the pits; and posts with readily visible caution signs that state "caution- Open Pit"

6.13. Dockboards:

WVU must ensure that each employee on a dock board is protected from falling 4 feet or more to a lower level by a guardrail system, including temporary guardrail system or handrails.

- Guardrails or handrails are not required when;
  - Dockboards are being used solely for materials- handling operations using motorized equipment;
  - Employees engaged in these operations are not exposed to fall hazards greater than 10 feet, and
  - Those employees have been trained in accordance with this WVU policy.

6.14 Runways and similar walkways:

WVU must ensure each employee on a runway or similar walkway is protected from falling 4 feet or more to a lower level by a guardrail system, including temporary guardrail system.

When it can be demonstrated that it is not feasible to have guardrails on both sides of a runway used exclusively for a special purpose, the employer may omit the guardrail on one side of the runway, provided the following:

- The runway is at least 18 inches wide; and
- Each employee is provided with and used a personal fall arrest system or travel restraint system.

6.15 Dangerous equipment:

WVU must ensure:

Each employee less than 4 feet above dangerous equipment is protected from falling onto the dangerous equipment by a guardrail system, including temporary guardrail system or a travel restraint system, unless the equipment is covered or guarded to eliminate the hazard.

Each employee 4 feet or more above dangerous equipment must be protected from falling by:

- Guardrail system, including temporary guardrail systems;
- Safety net systems;
- Travel restraint systems; or
- Personal fall arrest systems.

6.16 Outdoor Advertising (billboards).

When an employee engaged in outdoor advertising climbs a fixed ladder before November 19, 2018 that is not equipped with a cage, well, personal fall arrest system, or a ladder safety system, WVU must ensure each employee;

- Receives training and demonstrates the physical capability to perform the necessary climbs;
- Wears a full body harness equipped with an 18-inch rest lanyard;
- Keeps both hands free of tools or materials when climbing on the ladder; and
- Is protected by a fall protection system upon reaching the work position.

6.17 Stairways.

WVU must ensure each employee exposed to an unprotected side or edge of a stairway landing that is 4 feet or more above lower levels is protected by a guardrail or stair rail system;

- Each flight of stairs having at least 3 treads and at least 4 risers is equipped with stair rail systems and handrails.
- Each ship stairs and alternating tread type stairs is equipped with handrails on both sides.
- A guardrail system, including temporary guardrail system or gate will be established at the top of the stair when greater than 50 degrees from the horizontal

6.18 Window Washing

WVU employees will not work from window cleaning anchor, including temporary anchor systems, suspended scaffolding or related installations for window washing or vertical access. If this task is needed, contact WVU management for additional guidance.

6.19 Scaffold and rope descent systems:

- Each employee on a scaffold shall be protected from falling in accordance with 29 CFR part 1926, subpart L; and
- Rope decent systems are not approved for use by WVU personnel.

- Contractor use of rope descent systems:
    - Before any rope descent system is used, WVU must inform the contractor, in writing, that each anchorage has been identified, tested, certified, and maintained each anchorage so it is capable of supporting at least 5,000 pounds (268 kg), in any direction, for each employee attached. The information must be based on an annual inspection by a qualified person and certification of each anchorage by a qualified person, as necessary, and at least every 10 years.

6.20 Walking-working surfaces not otherwise addressed.

Except as provided elsewhere in this program, WVU must ensure each employee on a walking-working surface of 4 feet or more above a lower level is protected from falling by:

- Guardrail system, including temporary guardrail system;
- Hole Covers;
- Safety net systems; or
- Personal fall protection systems, such as personal fall arrest, travel restraint, or positioning systems.

6.21 Protection from falling objects.

When an employee is exposed to falling objects, WVU must ensure that each employee wears head protection that meets the requirements of WVU's Personal Protective Equipment Program and 1910 OSHA Subpart I. In addition, WVU must protect employees from falling objects by implementing one or more of the following:

- Erecting toeboards, screens, or guardrails systems to prevent objects from falling to a lower level;
- Erecting canopy structures and keeping potential falling objects far enough from an edge, hole, or opening to prevent them from falling to a lower level; or
- Barricading the area into which objects could fall, prohibiting employees from entering the barricaded area, and keeping objects far enough from an edge or opening to prevent them from falling to a lower level.

6.22 Fall Protection Equipment:

All fall protection equipment and systems must be used and maintained according to the manufacturer's requirements.

Fall protection systems must be inspected by a competent person prior to every use, and must be used and maintained according to the manufacturer's recommendations and OSHA regulations. These include railing systems, parapet wall systems, skylight covers, hole covers, net systems, installed anchor, including temporary anchor systems, horizontal life-line systems, and personal fall arrest and restraint systems.

In the event of a fall, the connecting device (and all other parts of the fall protection system) must be taken out of service and turned into WVU Management.

!Warning:
Reuse of equipment that was part of a fall can result in equipment failure, injury or death.

Components of the personal fall protection system must be removed immediately from service if involved in a fall, misused, damaged, or defective. WVU Management will be notified and the system replaced, tagged out of service, or returned to the manufacturer for recertification.

Anchor, including temporary anchor System:

- Must be engineered to support at least 5000 pounds per employee or a minimum of two times the intended load as determined by a qualified person for fall arrest and at least 3000 pounds per employee or a minimum of two times the intended load as determined by a qualified person for fall restraint.
- Shall not be installed within 15 feet of an edge.
    - In the event the roof is too short/narrow to accommodate the 15 feet rule, the anchor, including temporary anchor shall be installed as far from edges as possible.
- Anchors, including temporary anchorage systems must be visually inspected based on the manufacture's recommendations prior to each use by a competent person. This inspection includes, but is not limited to: rust, cracks, dents, instability, or any damage that may compromise the integrity of the unit.
- WVU Management shall be responsible for establishing and maintaining a standard operating procedure for inspections by a qualified person according to the manufacturer's recommendation. WVU Management shall document and maintain the most current inspection and testing schedule conducted by a qualified person.
- For initial installations: (See Appendix B: WVU Fall Protection Design Standard)
    - All Fall Protection equipment shall be installed per manufacturer's specifications or under the documented supervision of a Registered Professional Structural Engineer.
    - All Fall Protection equipment shall be installed by trained and qualified individuals and by contractors with knowledge, training, and experience installing fall protection equipment.
    - During installation, the initial unit on each type of decking and a 10% sampling of the fall protection equipment on each roof shall be tested by an independent engineering firm. WVU SHE & FM must be made aware of the scheduled testing and have the opportunity to be present during testing. The results, including pass/fail, date, time, location, and testing technique, shall be documented and communicated to the WVU Management. If failure occurs on a unit, work shall cease and WVU shall be consulted by the contractor for assistance.

Horizontal Life-Line System:

- Must be designed, installed, and used under the supervision of a qualified person; and
- Must be part of a complete personal fall arrest system that maintains a safety factor of at least two.
- Horizontal lifeline system, including temporary horizontal lifeline systems shall be visually inspected prior to each use by a competent person. The competent person shall inspect the horizontal lifeline system, including temporary horizontal lifeline system according to the manufacturer's requirements and for: rust, cracks, significant dents, instability, slack, torque, damage, or anything else that may compromise the integrity of the unit.
- WVU Management shall establish and maintain inspections, certifications, and re-certifications by a qualified person according to the manufacturer's recommendation. WVU Management shall document and maintain the most current inspection conducted by a qualified person.

Guardrail system, including temporary guardrail systems and Toeboards:

- These requirements apply to temporary controls on work sites, as well as permanent fixtures.
- Guardrail system, including temporary guardrail systems used at WVU must be an engineered system
- Must not create an additional hazard or injury.
- Must meet the OSHA requirements
    - A standard railing consists of a top rail, mid rail, and posts and is forty-two inches, plus or minus three inches (42" ±3") high from the top of the rail to the floor, platform, runway or ramp. Nominal height of the mid rail is 21 inches;
    - Standard toeboards must be a minimum of 3 ½ inches high, no more than ¼-inch clearance to the floor. If a mesh material is used, the opening must be less than 1 inch;
    - The anchor, including temporary anchoring of posts and framing of members for railings types must be of such construction that the completed structure is capable of withstanding a load of 200 pounds applied in an outward or downward direction along the top rail;
    - Guardrail system, including temporary guardrail systems have a surface that prevents injuries such as punctures and lacerations and prevents snagging of clothing; and
    - When guardrail system, including temporary guardrail systems are used at hoist areas, a removable guardrail section, consisting of a top rail and mid-rail, are placed across the access opening between guardrail sections when employees are not performing hoisting operations. The employer may use chains or gates instead of a removable guardrail section at hoist areas if the employer demonstrates the chains or gates provide a level of safety equivalent to guardrails.

- May not deflect more than 3 inches when a 200-pound force is applied outward or downward

Parapet Wall System:

- Parapets which are a permanent building structure will only be accepted as a permanent engineering control if they are at least 39 inches in height and meet the requirements of an engineered guardrail system, including temporary guardrail system.
- Parapets below 39 inches are not adequate fall protection control, but additional railing meeting guardrail specifications may be added to increase the height to a minimum height of 39 inches.

Full Body Harness:

- Only full-body harnesses shall be used by WVU personnel. The use of a body belt is prohibited.
- During a thorough visual inspection of the full body harness, conducted by the competent person. Any component with a defect must be removed from service immediately and returned to WVU management and marked as unusable, or destroyed.
- The full body harness shall be inspected, used, and maintained according to the manufacturer's requirements.
- Significant defects may include:
  - any cut, tear, or abrasion,
  - mold,
  - evidence of defective stretching,
  - an alteration or damage due to deterioration, fire, or corrosive damage,
  - tongues that are unfitted to the shoulder of buckles,
  - lose or damaged mountings,
  - non-functioning parts,
  - wear, or
  - internal deterioration.

Connecting Devices: Shock absorbing lanyards and lifelines

- Lanyards and lifelines shall have a minimum breaking strength of 5000 pounds
- Free fall distance shall be no greater than six feet.
- The maximum deceleration distance is 3.5 feet.
- Connecting assemblies shall have a minimum tensile strength of 5000 pounds.
- Connecting devices shall be inspected, used, and maintained according to the manufacturer's requirements
- During a thorough visual inspection of the connecting device, any component with a significant defect must be removed from service immediately and returned to WVU management in order for it to be tagged, marked as unusable, or destroyed.

- Significant defects include any cut, tear, abrasion, mold, or evidence of defective stretching, an alteration or damage due to deterioration, fire, corrosive damage, tongues that are unfitted to the shoulder of buckles, lose or damaged mountings, non-functioning parts, or wear, or internal deterioration.

Positioning Devices:

A positioning device is not a substitute for a personal arrest system and is limited to use as 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.

Where positioning device is used, it shall comply with the following:

- Positioning devices shall be rigged such that a free fall cannot be more than 2 feet; and
- Positioning devices shall be secured to an anchor, including temporary anchorage point capable of supporting at least twice the potential impact load of an employee's fall or 3,000 lbs., whichever is greater.

6.23 Retrieval Systems

Personal retrieval systems are used for confined space entry and non-entry rescue. Refer to the West Virginia University *Confined Spaces Program* for information on confined spaces entry.

6.24 Rescue Plan

- The employer provides prompt rescue to employees in the event of a fall.
- A rescue plan shall be developed by the competent person prior to work on elevated surfaces 4 feet or more above the lower level and communicated to all employees prior to the start of work.
- Immediately after a fall occurs when PFAS are deployed, emergency services shall be contacted via 911. The competent person must activate a method for prompt rescue utilizing either in-house systems such as portable ladders or aerial lifts, and utilize external organizations such as the local fire department via 911 system.

7 Recordkeeping

- All training records will be maintained by EHS. Trainers must send all training information, including sign-in sheets, training materials, and outlines to EHS immediately.
- Records pertaining to fall protection equipment will be managed and the responsibility of the individual departments and made available upon request. This includes yet is not limited to designs, installations, inspections, etc.

8 Disciplinary Action

- Employees failing to comply with this program, accessing rooftops or other elevated surfaces without training or approved fall protection equipment or systems, may be disciplined according to the WVU HR policy.

9 Reference

1910 Subpart D: Walking Working Surfaces and its preamble
1926 Subpart M: Fall Protection and its preamble

10 Program Review

- The WVU Fall Protection Program will be reviewed as necessary by EHS, SHE, and WVU Management.

11 Program Revisions

- Any revisions to the WVU Fall Protection Program will include an explanation for the change needed and how it will affect the current adopted program.

12 Appendices

- Appendix A: WVU Fall Protection Guide
- Appendix B: WVU Fall Protection Design Guideline

Appendix A: WVU Fall Protection Guide -Rooftop Work Only:

Work Category	Time/Duration	Distance from Unprotected Edge	Protection
General Industry Low Slope	Both Temporary & Infrequent	0-6 ft.	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, or personal fall arrest system. **Minimum 2 Employees**
		6-15 ft.	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, personal fall arrest system, OR Designated Area with Warning Line Protection **Minimum 2 Employees**
		15ft +	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, personal fall arrest system, Designated Area with Warning Line Protection, OR work rule to not work within 15 ft of any edges
General Industry Low Slope	Neither Temporary, nor Infrequent	0-15 ft.	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, or personal fall arrest system. **Minimum 2 Employees**
		15ft +	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, personal fall arrest system, OR Establish a Designated Area with warning line system minimum of 15 ft. from all edges and a work rule to stay within the area.
Construction Low Slope	Any time frame or durations.	0-15 ft.	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, or personal fall arrest system. **Minimum 2 Employees**
		15ft. +	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, or personal fall arrest system, OR Establish a Designated Area and warning line system minimum of 15 ft. from all edges and a work rule to stay within the area
Construction OR General Industry Steep Slope	Any time frame or durations.	Any Location	Guardrail system, including temporary guardrail system, safety net system, travel restraint system, or personal fall arrest system. **Minimum 2 Employees**

For assistance, please call your immediate supervisor.

In the event of an emergency, contact 9-1-1

Infrequent- A task or job that is performed only on occasion, when needed (e.g. equipment breakdown), on an occasional basis, or at sporadic or irregular intervals.

Low-sloped roof: a roof that has a slope less than or equal to a ratio of 4 in 12 (vertical to horizontal).

Steep-sloped roof: a roof that has a slope greater than a ratio of 4 in 12 (vertical to horizontal).

Temporary- The duration of the task the worker performs is brief or short. (i.e. the duration of the task is shorter than the time it would take to set up conventional fall protection.) The task must also be able to be completed at one time rather than repeatedly climbing up or returning to the roof or requiring more than one work shift to complete.

Appendix B: Fall Protection Design Guideline

This document is to be used as a guide for installation of fall protection equipment and systems.

PART 1- GENERAL

1.1 Any deviance from this document must be approved by WVU Safety and Health Extension.
1.2 All final fall protection designs must be approved by WVU Safety and Health Extension.
1.3 If a 3rd party designs are developed, WVU Safety & Health Extension shall review and approve provided designs prior to construction bidding.
1.4 WVU will ensure protection means for employees working within 15 feet of edges on all roofs, to include skylights, smoke hatches, chutes, and other potential openings.
1.5 Ladders, hatches, and access points, mechanical equipment, and other structures, when feasible, must be at least 15' from all edges.
1.6 The contractor must supply as-built roof drawings with all fall protection, ladders, and access to WVU upon completion of the project.
1.7 All mechanical equipment within 10 feet of an edge must be guarded by an engineered guardrail system, including temporary guardrail system or adequate parapet. Guardrail must extend 10 feet beyond the perimeter for the equipment.
1.8 All equipment and designed installed must meet or exceed all OSHA and ANSI requirements.
1.9 All existing fixed ladders that are replaces, modified, or repaired must have a personal fall arrest system or ladder safety system.
1.10 Access points within 6 ft. of a fall hazard, must be guarded between access and hazard.

PART 2- PRODUCTS

2.1 Fall Protection components, such as, but not limited to, roof hatches, skylight covers, ladders, railing, anchor, including temporary anchors, and lifelines, shall met or exceed OSHA regulations and ANSI standards.
2.2 Railing shall be painted per WVU standards for color and performance.
2.3 Fall Protection Lifelines shall be constructed of stainless steel.
2.4 All fixed ladders must extend a minimum of 42" above the surface and be equipped with an engineered walk-though system.
2.5 All new and replaced, modified, or repaired fixed ladders extending 24 ft. or more will be equipped with a personal fall arrest system or ladder safety system.
2.6 All roof hatches must have an engineered hatch guardrail system, including temporary guardrail system installed about the hatch.

PART 3-EXECUTION

3.1 WVU SHE will be included in all phases related to fall protection of the design process and must approve the final roof design.
3.2 Installation:

a. All Fall Protection equipment shall be installed per manufacturer's specifications and under the documented supervision of a Qualified Person.
b. All Fall Protection equipment shall be installed by trained and qualified individuals and by contractors with knowledge, training, and experience installing fall protection equipment.

c. During installation, the initial unit on each type of decking and a 10% sampling of the fall protection equipment on each roof shall be tested by an independent engineering firm. WVU SHE & FM must be made aware of the scheduled testing and have the opportunity to be present during testing. The results, including pass/fail, date, time, location, and testing technique, shall be documented and communicated to the WVU Project Engineer. If failure occurs on a unit, work shall cease and WVU shall be consulted by the contractor for assistance. Failed unites must be tagged out of service and WVU Management notified immediately.
    - In the event of a failure, the anchor, including temporary anchors must be replaced and failures re-tested, plus an additional 10% sampling.
d. WVU will not take ownership of the project until passing criteria is met.

3.3 WVU PDC must verify final installation prior to project completion and before payment for service is rendered.

3.4 WVU SHE will receive updated roof maps upon completion of the project. The roof maps/as-builts will include all access points, ladders, anchor, including temporary anchor locations, lifelines, and other applicable fall protection and roof information.

3.5 WVU SHE will provide any required specialized training for WVU employees on the installation of all protection and roof designs.

3.6 Any changes or updates to this document must be reviewed and approved by WVU SHE and EHS