MONTANA
TECHNOLOGICAL UNIVERSITY

Fall Protection Program

I. Purpose

The intent of the Fall Protection Program is to minimize the possibility of injury or death from the improper use or lack of use of appropriate fall protection. The program defines the requirements for fall protection as required by Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.28-30 Subpart D-Walking-Working Surfaces.

II. Responsibilities

Physical Facilities Director has responsibility for the Fall Protection Program for Physical Facilities employees.

Faculty utilizing the fall protection program and equipment has responsibility to ensure the program is followed.

The Director/Faculty member must:

- Identify work situations with fall hazards that are four feet (4 ft.) or greater.
- Provide appropriate training for employees.
- Provide adequate fall prevention & arrest equipment in accordance with ANSI and OSHA.
- Use the "buddy system" or have an observer to render assistance.

Employees or students who participate in the Fall Protection Program must:

- Understand the procedures and safe use of fall protection systems.
- Use appropriate fall protection systems.
- Attend all required training.

III. General

Employees and students of Montana Tech exposed to a fall hazard of 4 ft. or greater must be protected by the use of guardrail systems, safety net systems, or personal fall protection systems (such as personal fall arrest, travel restraint, or positioning systems). See Appendix A for definitions, Appendix B for

standard operating procedures, and Appendix C for specific requirements for fall protection systems.

IV. Training

Training for employees must be done by a qualified person. Training should take place at the time of hire, and before there is expose to a fall hazard, when an employee is going to use personal fall protection systems, or when the supervisor has reason to believe an employee does not have the understanding and skill required to perform job duties. The department may keep a copy of the training records, but a copy needs to be sent to Environmental Health and Safety (EHS) Office to be maintained.

Fall protection training will include:

- The nature of the fall hazards in the work area and how to recognize them;
- Procedures to be followed to minimize those hazards;
- Correct procedures for installing, inspecting, operating, maintaining, and disassembling the personal fall protection systems;
- Correct use and operation of personal fall protection systems and equipment including, but not limited to, proper hook-up, anchoring, and tie-off techniques, and methods of equipment inspection and storage, as specified by the manufacturer;
- The role of employees in Montana Tech's fall protection plan; and
- The requirements of the fall protection standard.

Reviewed: 2024

Appendix A: Definitions

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 eliminate them (29 CFR 1926.32 (f))

Controlled Access Zone – an area in which certain work (e.g., 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

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 standard.

Free Fall- (FF) - The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Full-body harness (FBH)-A component of a personal fall arrest system with straps which fasten about the person in a manner to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest and shoulders with means for attaching it to other components or subsystems.

Horizontal Lifeline (HLL)-A component of a horizontal lifeline subsystem, which component consists of a flexible line with connectors or other coupling means at both ends for securing it horizontally between two anchorages or anchorage connectors.

Lanyard (L)-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 places, formed, or constructed. A leading edge is considered to be an “unprotected side and edge” during periods when it is not actively and continuously under construction.

Lifeline (LL) - A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertically 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.

Personal Fall Arrest System (PFAS) - A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, and a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Qualified Person- A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the project. 4

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

Vertical Lifeline (VLL) - A component, element or constituent of a lifeline subsystem which consists of a vertically suspended flexible line with a connector at the upper end for fastening it to an overhead anchorage or anchorage connector and along which a fall arrester travels.

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, or safety net systems to protect employees in the area.

Appendix B: Standard Operating Procedures

1. Only employees who have the skill and training will be authorized to use the following fall protection systems:
    - Safety monitoring systems;
    - Guardrail systems;
    - Full body harness systems;
    - Controlled access zones;
    - Safety net systems; and
    - Positioning/restraint systems.

2. Employees who are constructing a leading edge four feet (4 ft.) or more above lower levels must be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems.

3. Safety approved aerial lifts may be used for working at heights; however, all operators must wear approved fall protection and be secured by a lanyard when working height is four feet (4 ft.) or higher.

4. Employees engaged in roofing activities on low-slope roofs with unprotected sides and edges four feet or more above lower levels must be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system.

5. On roofs 50 feet or less in width, the use of a safety monitoring system alone is permitted.

6. Employees working on a steep roof with unprotected sides and edges four feet or more above lower levels must be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems.

7. Lanyards must be attached to prevent a free fall of four feet. Approved attachment points must be established and marked in areas where lifelines and lanyards are used regularly. Lifeline attach points must be capable of supporting a load of 5,400 pounds.

8. All fall protection equipment must be visually inspected for defects prior to each use. If there is evidence of excessive equipment wear or deterioration or if mechanical malfunction is detected, the item must be removed from service.

9. Safety harnesses and lanyards that have been subjected to an impact load must be destroyed.

10. Any personnel using fall protection equipment must have an observer to render assistance when and if required.

Appendix C: Specific Requirements for Fall Protection Systems

A safety monitoring system refers to a fall protection system in which a competent person is responsible for monitoring the safety of employees. The duties of the safety monitor are to:

- Recognize fall hazards;
- Warn the employee when it appears the employee is unaware of a fall hazard or is acting in an unsafe manner;
- Be on the same walking/working surface and within visual sighting distance of the employee being monitored;
- Be close enough to communicate orally with the employees; and
- Have no other responsibilities which could take the monitor's attention from the monitoring function.

A controlled access zone refers to an area designated and clearly marked, in which leading edge work may take place without the use of guardrail or personal fall arrest systems to protect the employees in the area. Control zone systems must follow these provisions:

- When used to control access to areas where leading edge and other operations are taking place, the controlled access zone should be defined by a control line or by any other means that restricts access.
- When control lines are used, they will be erected not less than 6 feet nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.
- The control line will extend along the entire length of the unprotected or leading edge and should be approximately parallel to the unprotected or leading edge.
- The control line will be connected on each side to a guardrail system or wall.
- The control lines will consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:
    - Each line should be flagged or otherwise clearly marked at not more than 6-foot intervals with high visibility material.
    - Each line should be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the walking/working surface and its highest point is not more than 45 inches from the walking/working surface.
    - Each line will have a minimum breaking strength of 200 pounds.

Guardrail Systems consisting of a top rail, midrail, and screens or mesh should meet the following requirements:

- The height of the top rail must be between 39 inches and 45 inches above the walking/working surface;

- Midrails will be installed at a height midway between the top rail and the walking/working surface;
- Screens and mesh, when used, will extend from the top rail to the walking/working surface and along the entire opening;
- The top rail of the guardrail systems should be capable of withstanding without failure a force of at least 200 pounds without deflecting to a height of less than 39 inches;
- Midrails, screens or mesh should be capable of withstanding a force of at least 150 pounds;
- Steel and plastic banding cannot be used as top rails or midrails;
- Top and midrails must be at least ¼ inch in diameter or thickness to prevent injuries;
- Guardrail systems used on ramps and runways should be erected along each unprotected side;
- If manila, plastic or synthetic rope is being used as a top rail or midrail, it must be inspected as frequently as necessary to ensure that it continues to meet the strength requirements as noted above.

A Personal Fall Arrest system is used to arrest an employee in a fall from a working level. The components are individually designed for a specific system and may not be compatible with other systems. The components consist of the following:

- connectors,
- Dee-rings,
- full-body harness,
- snap hooks,
- lanyards, and
- lifelines.

Inspect each component prior to each use for wear, damage or other deterioration if a defect is found remove from service.

Safety net systems must meet the following requirements:

- Safety nets shall be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet below such level.
- Safety nets shall extend outward from the outermost projection of the work surface.
- Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test.
- Safety nets and their installations shall be capable of absorbing an impact force equal to that produced by the drop test.

Positioning/Restraint System is used to hold a worker in place while allowing a hands-free work environment at elevated heights and/or restrict the worker's movement to prevent reaching a location where a fall hazard exists. A typical positioning/restraint system consists of the following:

- anchorage/anchorage connector,
- body wear (full-body harness), or
- connecting device (positioning lanyard).

**The positioning and suspension systems are not designed for fall arrest; therefore, a back-up fall arrest system must be used.*