

New Mexico Institute of Mining & Technology



Fall Protection Program

REGULATORY STANDARDS: OSHA - 29 CFR 1910.66
29 CFR 1910.128, 129, 130, 131, (Proposed)
29 CFR 1926.104
29 CFR 1926.500

BASIS: Approximately 300,000 disabling injuries occur in work-related falls each year. 85% of workers surviving falls lose time from their jobs.

GENERAL: New Mexico Tech will ensure that the hazards of all elevated falls over 6 feet in length are evaluated, and that information concerning these hazards is communicated to all employees.

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1. Written Program. The Safety Director will review and evaluate this standard practice instruction:

- On an annual basis
- When changes occur to 29 CFR, that prompt revision of this document
- When facility operational changes occur that require a revision of this document
- When there is an accident or close-call that relates to this area of safety

2. Statement of Policy. The hazards of potential falls at heights of 6 feet or above are addressed in this policy. This instruction describes a systematic approach that will be used to protect New Mexico Tech employees from falling. This instruction also lists some of the most common fall hazards, and provides recommendations and guidelines for selecting fall protection systems.

3. Facility/Department Evaluation. The workplace/jobsite will be assessed before each job for potential fall hazards. Proper fall equipment will be used for jobs requiring fall protection when elimination of the hazard(s) is not possible. The Safety Director will evaluate the facilities by department to determine static fall hazards.

4. Training. Our Safety training efforts will be focused on all employees who are exposed to fall hazards in the work area. Our program will include but will not be limited to:

- A description of fall hazards in the work area
- Procedures for using fall prevention and protection systems
- Equipment limitations
- The elements encompassed in total fall distance

- Prevention, control and fall arrest systems
- Inspection and storage procedures for the equipment

Generally, workers will be trained to recognize the hazards of falling from elevations and to avoid falls from grade level to lower levels through holes or openings in walking/working surfaces.

- 4.1 Initial training. Training will be conducted prior to job assignment. The training will include, as a minimum the following:
 - 4.1.1 Types of fall protection equipment appropriate for use.
 - 4.1.2 Recognition of applicable fall hazards associated with the work to be completed and the locations of such.
 - 4.1.3 All other employees whose work operations are or may be in an area where fall protection devices may be utilized, will be instructed to an awareness level concerning hazards associated with fall protection operations.
 - 4.1.4 Fall protection equipment identification. Fall protection equipment having identification numbers will be checked for legibility. Fall protection equipment having illegible identification markings will be turned in to the supervisor for inspection.
 - 4.1.5 Equipment donning and doffing procedures.
 - 4.1.6 Equipment strengths and limitations.
 - 4.1.7 Documentation. The safety specialist will document that employee training has been accomplished and is being kept up to date. The certification will contain each employee's name and dates of training. Training will be conducted by the Safety Director or Assistant Safety Director.
- 4.2 Refresher training. This standard practice instruction will be provided to all employees receiving refresher training. The training content will be identical to initial training. Refresher training will be conducted on an annual basis or when the following conditions are met, whichever event occurs sooner.
 - 4.2.1 Retraining will be provided for all authorized and affected employees whenever (and prior to) a change in their job assignments, a change in the type of fall protection equipment used, or when a known hazard is added to the work environment which affects the fall protection program.
 - 4.2.2 Additional retraining will also be conducted whenever a periodic inspection reveals, or whenever the safety director has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of fall protection equipment or procedures.
 - 4.2.3 Whenever a fall protection procedure fails.

5. Fall Hazard Control Procedures (Fall Prevention).

- 5.1 Control Procedures Development. Once a facility evaluation has been accomplished, procedures will be developed, documented and utilized for the control of potential fall hazards. Safety during access and egress from elevated work sites will also be considered. The following guidelines will be used when planning work at elevated heights:

- Involve the Safety Department early in the project planning/job planning so that they can recommend appropriate fall-protection measures and equipment.
 - Involve qualified Engineers when load rating of anchorage points must be determined or is in doubt. Required training will be provided as necessary.
 - Involve Engineering and Maintenance when anchorage points must be installed.
 - The Safety Department will use the expertise of fall protection equipment. For New Mexico Tech, this is the Miller Safety Equipment Company.
 - New Mexico Tech will be specific in dealing with fall hazards when developing contracts. Contractors will be required to provide a written fall protection program which describes the Contractors' fall protection policies and procedures when they will be working at elevated heights.
- 5.2. Procedural Format. The following format will be followed when developing fall protection procedures. The Safety director will be responsible for the implementation of these procedures. The procedures will clearly and specifically outline the following:
- 5.2.1. A specific statement of the intended use of the procedure.
 - 5.2.2. An annual review of our accident records, including OSHA 200 logs and Workers' Compensation documentation.
 - 5.2.3. Interviews with employees and groups of employees whose work environment includes or may include fall hazards.
 - 5.2.4. Physical observations of the work environment(s) that involve fall hazards or the potential of such.
 - 5.2.5. Observations of individuals and their job tasks and work habits that expose them to existing or potential fall hazards.
 - 5.2.6. The correct procedures to rescue employees who have fallen.
 - 5.2.7. The role of each employee in fall protection plans and applicable policies.

6. Protective Materials and Hardware. Appropriate fall protection devices will be provided for potential fall hazards. Selection of the equipment will be based on a fall protection evaluation. Evaluations will be conducted only by the Safety or Assistant Director.

6.1. Selection Criteria.

- 6.1.1. Fall Protection devices will be singularly identified; will be the only devices(s) used for controlling falls; will not be used for other purposes; and will meet the following requirements:
 - 6.1.1.1. Capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
 - 6.1.1.2. Standardization within New Mexico Tech facilities. Fall protection devices will be standardized whenever possible.

7. Fall Protection Systems. When fall hazards cannot be eliminated through any other means, fall arrest systems will be used to control falls. Proper training on the use of fall arrest equipment is essential and will be provided prior to use.

- 7.1 Full Body Harness Systems. A full body harness system consists of a full-body harness, lanyard, energy shock absorber, and self-locking snap hook. Before using a full-body harness system, the supervisor and Safety Director will address the following issues:

- 7.1.1 Have the employees been trained to recognize fall hazards and how to use fall arrest systems properly?
- 7.1.2 Are all components of the system compatible according to the manufacturer's instructions? (Miller)
- 7.1.3 Have appropriate anchorage points and attachment techniques been reviewed and/or developed?
- 7.1.4 Have free fall distance calculations been considered so that a worker will not strike a lower surface or object before the fall is arrested?
- 7.1.5 Have safe methods to retrieve fallen workers been planned and documented by the safety officer?
- 7.1.6 Have the full-body harness and all of its components been inspected by the supervisor both before each use and on annual basis?
- 7.2. Retractable Lifelines, will not be utilized at New Mexico Tech.
- 7.3. Standard Harnesses. Harnesses for general purpose work should be Class III, constructed with a sliding back D-ring. Standard harnesses are suitable for continuous fall protection while climbing, riding, or working on elevated personnel platforms. They are suitable for positioning, fall arrest, and the rescue and evacuation of people who are working at elevated heights.

8. Inspection and Maintenance. To ensure that our fall protection systems are ready and able to perform their required tasks, a program of inspection and maintenance will be implemented and maintained. The following as a minimum, will comprise the basic requirements of the inspection and maintenance program:

- 8.1 Equipment manufacturer's instructions will be incorporated into the inspection and preventive maintenance procedures.
- 8.2 All fall protection equipment will be inspected prior to each use, and a documented inspection at intervals not to exceed 12 months, or in accordance with the manufacturers guidelines.
- 8.3 The user will inspect his/her equipment prior to each use and check the inspection date. (Daily when using fall protection equipment).
- 8.4 Any fall protection equipment subjected to a fall or impact load will be removed from service immediately and inspected by a qualified person/supervisor and sent back to the Miller.
- 8.5 Equipment that is damaged or in need of maintenance will be tagged as unusable, and will not be stored in the same area as serviceable equipment.

9. Most Common and Most Dangerous Fall Hazards. The tasks and situations listed below present inherent fall hazards. These are not unique to New Mexico Tech. Supervisors will give special consideration to fall protection for the following tasks:

- 9.1 Working from crane booms and tower cranes.
- 9.2 Working on top of machinery and equipment, such as overhead cranes, furnaces, conveyors and presses.
- 9.4 Working on roofs, with deteriorating or unsupported sections and framing.
- 9.5 Working over tanks or open pits.
- 9.6 Working from a fixed or portable ladder, or climbing systems.

10. Contractor Responsibilities. In addition to complying with the fall protection requirements that apply to all company employees, each contractor who is retained to perform operations that involve fall protection will:

- 10.1 Obtain any available information regarding fall hazards and protective measures from New Mexico Tech.
- 10.2 Coordinate fall protection operations with the Safety Director when both company personnel and contractor personnel will be working in or near recognized fall hazard locations.
- 10.3 Inform New Mexico Tech of the fall protection program the contractor will follow and of any hazards created by their operations. (See appendix for Contractor Safety Evaluation)

11. Definitions

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

Body belt means a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body harness means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

Competent person means a person who is capable of identifying hazardous or dangerous conditions in any personal fall arrest system or any component thereof, as well as in their application and use with related equipment.

Connector means a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system.

Deceleration device means any mechanism with a maximum length of 3.5 feet, such as a rope grab, ripstitch lanyard, tearing or deforming lanyards, self-retracting lifelines, etc. which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Energy shock absorber means a device that limits shock-load forces on the body.

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

Fall arrest system means a system specifically designed to secure, suspend, or assist in retrieving a worker in or from a hazardous work area. The basic components of a fall arrest system include anchorage, anchorage connector, lanyard, shock absorber, harness, and self-locking snap hook.

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

Free fall distance means the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall (maximum of 6 feet). This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Hole means a gap or void 2 inches or more in its least dimension, in a floor, roof, or other walking/working surface.

Lanyard means a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline or anchorage.

Leading edge means the edge of a floor roof, or formwork for a floor or other walking/working surface which changes location as additional floor, roof, decking, or formwork sections are placed, formed or constructed. A leading edge is considered to be an unprotected side and edge during periods when it is not actively and continuously under construction.

Lifeline means a component consisting of a flexible line for connection to an anchorage at one end to hang vertically or for connection to anchorages at both ends to stretch horizontally and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

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

Personal fall arrest system means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Positioning device system means a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

Qualified person means one with a recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation and specifications in the subject work, project, or product.

Retractable lifeline means a fall arrest device that allows free travel without slack rope, but locks instantly when a fall begins.

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

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

Self-retracting lifeline/lanyard means a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snaphook means a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snaphooks are generally one of two types:

- The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or

- The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. As of January 1, 1998, the use of a non-locking snaphook as part of personal fall arrest systems and positioning device systems is prohibited.

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

Walking/Working surface means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Warning line system means a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

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