WALKING AND WORKING SURFACES

Program Statement

Walking and working surfaces will be designed and maintained to minimize the risk of falls and impact by stationary or moving objects.

Objectives

The objectives of this chapter are to ensure that:

- walking and working surfaces are maintained unobstructed and free of recognized fall and impact hazards,
- temporary hazardous conditions of walkways and working surfaces are brought to the attention of users,
- fall protection systems are provided for work at high locations,
- the design and use of temporary elevated platforms comply with Federal and State regulations,
- UNA employees are able to recognize fall hazards and adopt proper preventive measures.

General Procedures

All permanent walking and working areas will be maintained clean, orderly, and in sanitary condition.

All floors will be kept free of protruding objects.

Aisles and passageways will be unobstructed and appropriately marked with yellow lines whenever these lines are considered necessary to facilitate circulation and protect users.

Signs will be posted to warn UNA employees and general public about temporary hazardous conditions such as wet and slippery floors, uneven or damaged flooring surfaces, the presence of unusual objects, wall and floor openings and holes, and falling objects. Access to areas with hazardous conditions will be restricted by using barrier tape, guards, or fences.

Guardrails and covers

The following locations will be guarded with standard or equivalent railing:

See OSHA's definition of a standard railing in Appendix A of this chapter.

√ each open side of a floor platform located 4 feet or more above the adjacent floor level

√ work areas adjacent to dangerous equipment (regardless of their height)

√ stairway floor openings (except the entrance to the stairway)

√ flight of stairs with four or more risers. In this case, the number of handrails will be determined by the width of the stairway according to the following rule:

stairways less than 44 inches wide, at least one handrail for enclosed stairs (on the right-hand side descending), and two handrails for open stairs.

Stairways between 44 and less than 88 inches wide, two handrails.

Stairways equal or wider than 88 inches, three handrails (one central and two lateral).

Every manhole or similar floor opening will be guarded by a proper cover. If this cover is removed, the opening will be protected by a temporary guardrail or warning system.

Portable Ladders

Ladders will be in good condition and of proper length and type for the use intended.

For acceptable lengths and types of ladders, see Appendix B of this chapter.

Ladders will be inspected frequently by the user and those with defects will be withdrawn from service for repair or destruction.

For an example of a ladder inspection checklist, see Appendix C of this chapter.

Damaged ladders will be tagged or marked with the following legend:

"Dangerous, Do Not Use"

The ladder inspection will consider all ladder components, with emphasis on those parts that are more susceptible to damage. At a minimum, inspection will verify that:

- √ joint between the steps and side rails are tight
- √ all hardware and fittings are securely attached
- √ all movable parts operate freely without binding or undue play
- √ rope is not worn out or frayed
- √ safety feet are in good condition
- √ rungs and steps are free of grease and oil
- √ wood parts are free from sharp edges, splinters, shake, wane, decay, and other irregularities.

When using portable ladders the following safe practices will be adopted:

- √ portable rung and cleat ladders will be positioned at a pitch that prevents slippage and tipping

See diagram of the ladder preferred pitch on Appendix D of this chapter.

- √ extension ladders will be tied in place or have lateral outriggers to prevent side slip
- √ tops of self-supporting ladders will not be used as steps
- √ when climbing a ladder, the three-point contact principle will be followed (two hands and a foot or two feet and a hand)
- √ when climbing a ladder, tools will be carried in a tool belt or raised with a hand line attached to the top of the ladder
- √ ladders will not be tied or fastened together to provide longer sections unless specifically designed for such purpose
- √ when used to gain access to elevated platforms or roof, the ladder will extend at least three feet beyond the top edge of support
- √ ladders will be capable of supporting an actual load of at least four time the maximum intended load
- √ ladders will not be placed on boxes, barrels, or other unstable bases to obtain additional height
- √ ladders will not be placed in front of doors, unless the door is blocked upon, locked, or guarded
- √ ladders used near electrical equipment will be made of electrically non-conductive materials

All portable metal ladders will be marked with a sign that reads: “***CAUTION—Do Not Use Around Electrical Equipment.”***

Scaffolds

All scaffolds and any other work access platforms used in the UNA campus will comply with the requirements set forth by OSHA in 29 CFR 1926.450 – 454.

The following is a summary list of general requirements concerning scaffolding:

Capacity

- √ scaffolds and their components will be capable of supporting at least four times the maximum intended load without failure
- √ suspension rope used on non-adjustable suspension scaffolds must be capable of supporting at least 6 times the maximum intended load applied or transmitted to the rope.

Construction and use

- √ no scaffold may be erected, moved, dismantled, altered, unless approved and supervised by a qualified and competent person
- √ footing will be level, sound, rigid, and capable of supporting the load. Unstable objects (barrels, loose bricks or concrete blocks) will not be used to support scaffolds or planks
- √ supported scaffolds with a height to base width ratio of more than four to one will be restrained from tipping
- √ working platforms will have a safe means of access consisting of portable ladders, hook-on ladders, stairway-type ladders, ramps, or walkways
- √ suspension ropes will be shielded from heat-producing processes, or treated to protect against corrosion when corrosive substances such as acids are used on the scaffold
- √ slippery conditions will be eliminated
- √ each working platform will be at least 18 inches wide, fully planked or decked, and positioned with its front edge close to the face of work (less than 14 inches) (exceptions apply)
- √ vertical lifelines will be independent of the scaffold, and protected from sharp edges and abrasion
- √ the area below the scaffold will be barricaded to restrict access and protect workers and public from falling objects
- √ a toeboard (4 inches of height) will be placed along the edge of the platform when there is a potential for falling objects
- √ when loose materials are expected to pile up above the height of the toeboard, a wire screen (No. 18 gauge U.S. Standard ½-inch mesh) covering all open areas between the toe board and the guardrail of the scaffold will be added.

Fall protection in scaffolds

- √ fall protection will be provided for each employee working on a scaffold 6 feet or more above a lower level
- √ the type of fall protection provided will be as follow:
  - personal fall arrest systems for suspension scaffolds;
  - personal fall arrest systems and guardrails for self-contained adjustable scaffolds when the platform is supported by ropes;
  - personal fall arrest systems or guardrails for supported scaffolds.

Fall Protection

The following activities require fall protection

Any work activity conducted on a location with an unprotected side or edge 6 feet or more above a lower level. Locations include working platforms, ramps, runways, floor holes (including skylights), edge of excavations, wells, pits, shafts, roofs and wall openings.

Any location regardless of height, above dangerous equipment.

Fall protection systems

General methods of fall protection include guardrails, safety nets, and personal fall arrest systems.

Specific methods of fall protection include:

- √ covers for floor holes
- √ positioning device systems for steel erection
- √ fences or barricade for excavations
- √ warning line in combination with guardrails, safety nets, personal fall arrest or safety monitoring for roofing work.

See Appendix E of this chapter for a description of some of these systems.

Training

Each employee exposed to fall hazards will be trained on hazard recognition and their means of protection.

The training program will include the following topics:

- √ the nature of the fall hazards
- √ procedures for safe and proper use of fall protection systems
- √ the role of each employee in safety monitoring system (if this system is used)

- √ procedures for safe handling and storage of fall protection equipment
- √ the content of the fall protection standard.

Retraining will be offered when any of the following conditions occur:

- √ changes in the workplace make the previous training obsolete
- √ different fall protection systems are adopted
- √ inadequacies in employee knowledge and performance are detected.

APPENDIX A

GUARDRAIL SYSTEMS

Standard guardrails 29 CFR 1910.23 (e).

A standard railing consists of top rail, mid rail, and posts. The characteristics of this system are:

- √ a vertical height of 42 inches measured from the top of rail to floor
- √ mid-rails installed approximately halfway between the top rail and the floor
- √ a guardrail designed to withstand a force of at least 200 pounds, applied within 2 inches of the top edge, in any direction, without failure
- √ the surface of the top rail smooth and continuous to prevent punctures, lacerations, or snagging of clothing
- √ for pipe railings, posts and top and intermediate railings of at least 1.5 inches nominal diameter with posts spaced not more than 8 feet on centers
- √ for structural steel railings, posts and top and intermediate rails of at least 2-inch by 2 inch with posts spaced not more than 8 feet on centers.

Stair railing

A stair railing is similar to a standard railing but the vertical height will be not more than 34 inches and no less than 30 inches, measured from the top of the rail to the upper surface of tread in line with face of the riser.

APPENDIX B
ACCEPTABLE LENGTH AND TYPES OF LADDERS

Portable wood ladders

Self supporting stepladders will:

- √ not be longer than 20 feet
- √ have uniform step spacing, which will be no more than 12 inches
- √ have a metal spreader or locking device to securely hold the front and back sections in open position.

Single ladders (non-self-supporting portable ladder) will:

- √ not be longer than 30 feet
- √ not be longer than 60 feet for two section extension ladders
- √ have a secure footing.

Portable metal ladders

Rungs and steps shall be fabricated or treated to minimize the possibility of slipping.

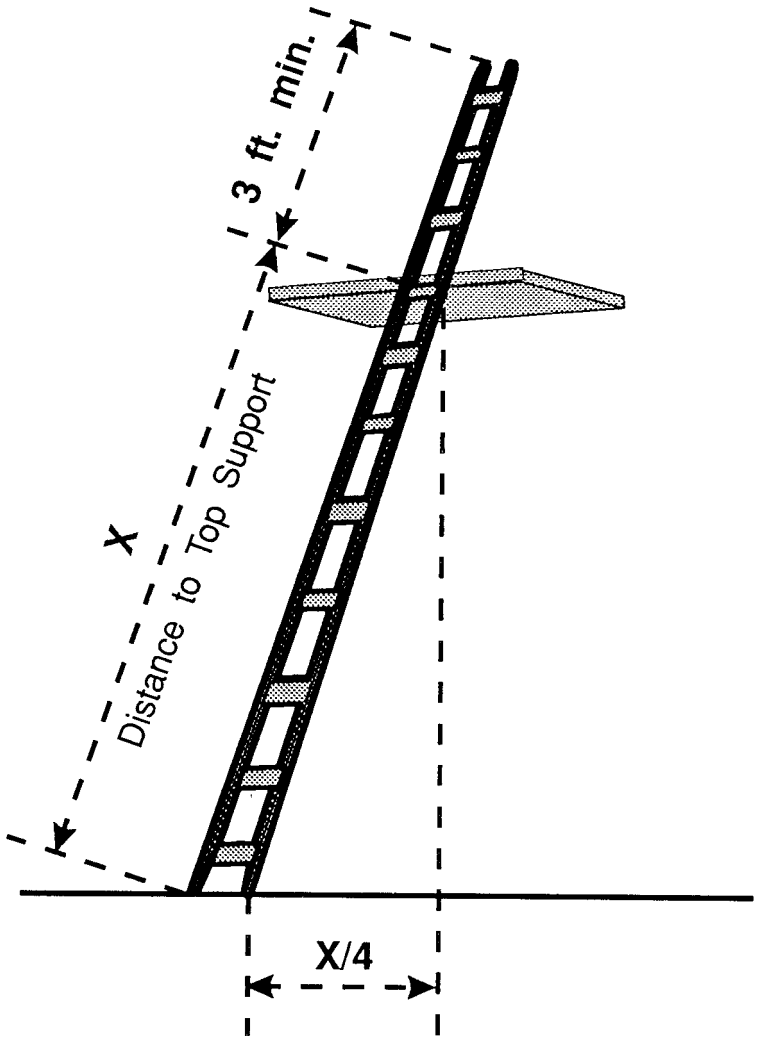
Self supporting stepladders will:

- √ not be longer than 20 feet
- √ have the bottom of the four rails treated with a non-slip material.

Single ladders (non-self supporting, portable ladder) will:

- √ not have individual sections exceeding 30 feet
- √ not be longer than 48 feet (two section ladders)
- √ not be longer than 60 feet (three section ladders).

APPENDIX C
LADDER POSITIONING



APPENDIX D
LADDER INSPECTION CHECKLIST

General

Item to be Checked	Needs Repair	Condition Acceptable
Loose steps or rungs (considered loose if they can be moved at all with hands)		
Loose nails, screws, bolts, or other metal parts		
Cracked, split, or broken uprights, braces, steps, or rungs		
Slivers on uprights, rungs or steps		
Damaged or worn nonslip bases		

Stepladders

Item to be Checked	Needs Repair	Condition Acceptable
Wobbly (from side strain)		
Stop on hinge spreader broken		
Loose or bent hinge spreaders		
Broken, split, or worn steps		
Loose hinges		

Extension ladders

Item to be Checked	Needs Repair	Condition Acceptable
Loose, broken, or missing extension locks		
Defective locks that do not seat properly when the ladder is extended		
Deterioration of rope, from exposure to destructive agents		

Trestle ladders

Item to be Checked	Needs Repair	Condition Acceptable

Loose hinges		
Wobbly		
Loose or bent hinge spreaders		
Stop on hinge spreader broken		
Center section guide for extension out of alignment		
Defective locks for extension		

Sectional ladders

Item to be Checked	Needs Repair	Condition Acceptable
Worn or loose metal parts		
Wobbly		

Source: Accident Prevention Manual for Industrial Operations. National Safety Council, 1977.

APPENDIX E
FALL PROTECTION SYSTEMS

Personal Fall Arrest Systems

Personal fall arrest systems will comply with 29 CFR 1926.502 (d). The main characteristics and conditions of use are listed below:

- √ only body harnesses acceptable for personal fall protection systems
- √ connectors, D-rings, snap-hooks, lifelines and lanyards in compliance with 29 CFR1926.502 (d)(1)-(9).
- √ each employee attached to a separate vertical lifeline
- √ ropes and straps used in lanyards, lifelines, and body harnesses made of synthetic fibers
- √ anchorage of lifeline attachments independent of support devices used to suspend platforms and other working surfaces
- √ units limiting arrest force to less than 1800 pounds and travel distance to less than 6 feet
- √ when subjected to impact, fall arrest system removed from service and not used until an inspection by a competent person assures that are safe for re-use.

Safety Net Systems

Safety net systems used for fall protection will comply with 29 CFR 1926.502 (c). The main characteristics and conditions of use are listed below:

- √ safety nets installed as close as practicable to the working/walking surface, with a limit distance of 30 feet
- √ surface area of net exceeding working platform area by a length of an edge that is a function of the vertical distance between these two components (see Table 29 CFR 1926.502 (c)(2))

- √ nets able to absorb a force specified by a drop test (29 CFR 1926.502 (c)(4) gives the test protocol). The drop test will be applied following initial installation, net relocation, major net repair, and at 6 months intervals if the net is left in place for extended periods of time.

Warning Line Systems

Warning line systems will comply with 29 CFR 1926.502 (f). The main characteristics and conditions of use of these systems are given below:

- √ warning systems used for roof work if other fall protection systems are not possible
- √ warning systems used in combination with some other fall protection method
- √ A warning line established around all sides of the roof work area
- √ warning line maintained closed (by using ropes, wires, or chains) at all times, except for access paths, which will be opened only to allow the entrance of people and materials to the working area.

Safety Monitoring Systems

Safety monitoring systems will comply with 29 CFR 1926.251 (h). The main characteristics and conditions of use of these systems are given below.

A person will be designated for safety monitoring. This person will:

- √ be able to recognize fall hazards
- √ warn others when he/she detects unsafe actions
- √ stay in the work area during operations
- √ not have other responsibilities besides monitoring.

Only employees engaged in roofing work and covered by a fall protection plan will be allowed in the working area.

APPENDIX F

Glossary of Terms (Fall Protection)

Deceleration device	Any mechanism, such as a rope grab, rip-stitch lanyard, specially woven lanyard, tearing or deforming lanyards, or automatic self-retracting lifelines which serves to dissipate a substantial amount of energy during a fall arrest.
Lanyard	A flexible line of rope, wire rope, or strap with a connector at each end for connecting the body-harness to a deceleration device, lifeline, or anchorage.
Lifeline	A vertical or horizontal flexible line used for connecting the personal fall arrest system to the anchorage.
Leading edge	The edge of a floor, roof, or formwork for floor or other walking/working surface which changes location as the work progresses.
Low-slope roof	A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).
Personal fall arrest	A system used to arrest an employee in a fall. It consists of an anchorage, connectors, a body-harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
Safety monitoring	A system by which a competent person is responsible for recognizing and warning employees of fall hazards.
Steep roof	A roof having a slope greater than 4 in 12 (vertical to horizontal).
Warning line system	A barrier erected on a roof to warn employees that are approaching an unprotected roof side or edge.
Positioning device	A body-harness system rigged to allow an employee to be supported on an elevated vertical surface, and work with both hands free while leaning.