

ALTERNATIVE FALL PROTECTION ON LOW SLOPE ROOFS

Fall protection is required on any walking or working surface, including roofs, when there is a fall hazard of 4 feet. Alternative systems may only be used under specific circumstances and procedures. Alternative systems include a **warning line**, a **safety monitor** and a **safety watch**.

This guidance applies only to work on a low slope roof (4:12 or less) when traditional fall protection systems cannot be used, such as a 42-inch parapet wall at the roof edge, guardrails, and personal fall restraint and arrest systems.

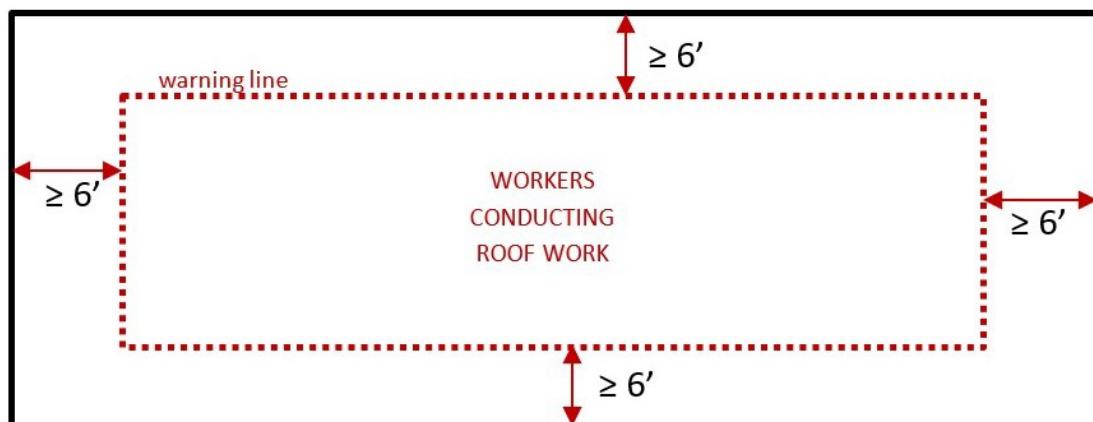
- Guardrails or personal fall protection systems are *always* required when working on steep roofs (greater than 4:12).
- This guidance does *not* apply to construction work advancing the roof leading edge or installing the roof deck.
- Fall protection (including alternative systems) is *not* required when work, other than construction activities are infrequent and temporary that occur at least 15 feet from the edge, **and** the employer prohibits worker(s) from going closer than 15 feet from the edge.

Refer to Washington Administrative Code 296-880-40040, 296-880-40045, and 296-880-40050 for more information.

ROOFING WORK

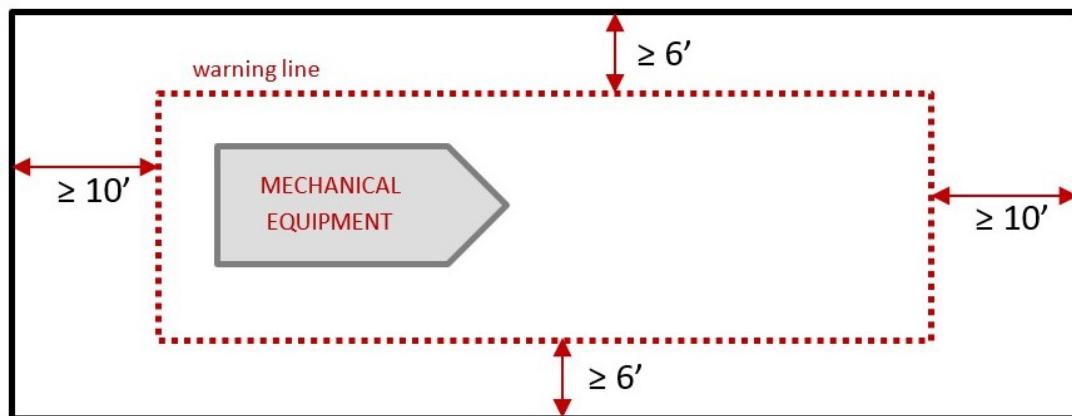
Roofing work is defined as the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work.

- **Warning line:** Optional when work is occurring at distances greater than 6 feet from the edge; erect them around the work area not less than 6 feet from the roof edge.



Warning lines are *not* allowed within 6 feet of the edge.

If mechanical equipment is used, erect warning lines not less than 6 feet from roof edge in parallel to equipment operation, **and** not less than 10 feet from roof edge perpendicular to equipment operation.

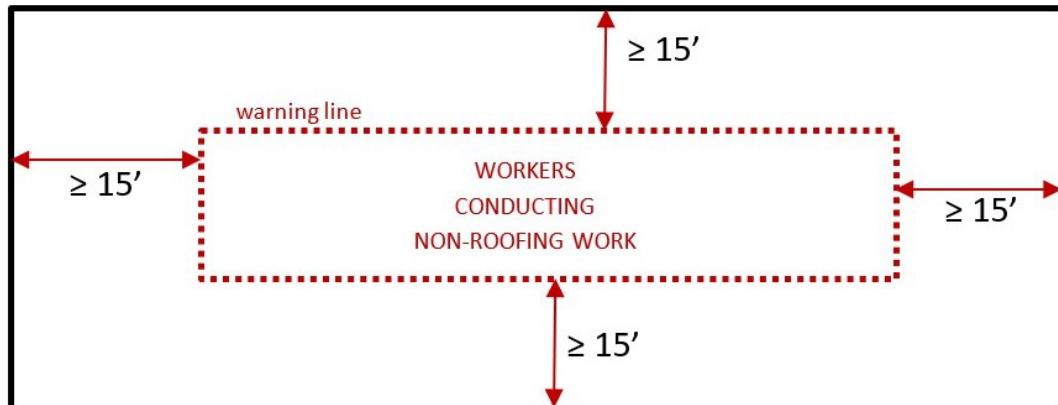


- **Safety monitor:** Optional when work is occurring at distances greater than 6 feet from the edge. When work is occurring within 6 feet from the edge, a safety monitor can be used with or without warning line; however, it is not recommended. Do not use/store mechanical equipment where the only protection is a safety monitor.
- **Safety watch:** Not allowed

CONSTRUCTION WORK (NON-ROOFING)

General construction work (*not* including roofing work) can use a warning line system set 15 feet from the edge. A safety monitor or safety watch is *not* allowed.

- **Warning line:** Optional when work is occurring at distances greater than 15 feet from the edge. If warning lines are used, erect at a distance greater than 15 feet from the edge.

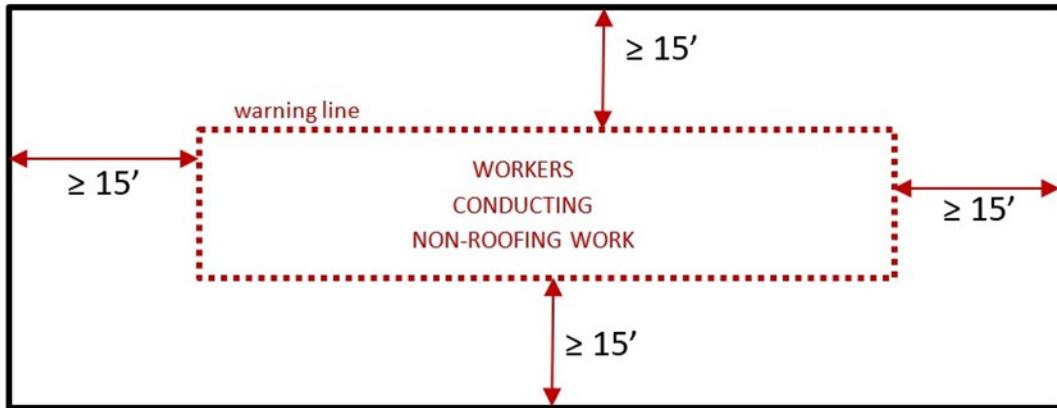


- **Safety monitor:** Not allowed
- **Safety watch:** Not allowed

ACTIVITIES OTHER THAN CONSTRUCTION WORK

Activities that do *not* include construction or roofing work can use a safety watch or a warning line under specific conditions (described below).

- **Warning line:** Optional when work is occurring at distances greater than 15 feet from the edge. Erect warning lines at a distance greater than 15 feet from the edge.



- **Safety monitor:** Not allowed
- **Safety watch:** Optional when work is occurring at distances greater than 6 feet from the edge when the work is infrequent and temporary. A safety watch is not allowed with activities that occur within 6 feet of the edge.

WARNING LINE

Warning line systems, consisting of ropes, wires or chains and supporting stanchions, form a barrier around the work area to warn workers they are near an unprotected roof side or edge.

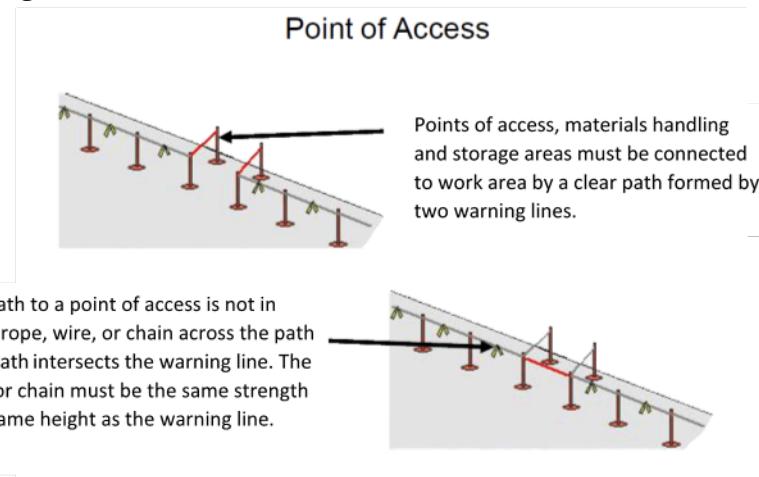
WARNING LINES ARE ERECTED AS FOLLOWS:

- Use only on low slope roof as part of an approved [Fall Protection Work Plan](#).
- Erect warning lines around all unprotected sides and edges of work area.
- The rope, wire, or chain must have a minimum tensile strength of 500 pounds, and after attached to the stanchions, must be capable of supporting, without breakage, the loads applied to the stanchions.

Note: Highly visible caution or danger tape may be used in lieu of rope, wire, or chain if it is at least three inches wide, three mils thick and has a tensile strength of at least 200 pounds.

- Flag line at 6 feet intervals with highly visible material. Highly visible caution or danger tape as described above does not need to be flagged.
- Rig and support line so its lowest point, including sag, is not less than 36 inches and not more than 45 inches from the roof or surface.

- After erected, with the line attached, stanchions will be capable of resisting a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the roof surface, perpendicular to the warning line, and in the direction of unprotected sides or edges of the surface.
- Attach line at each stanchion so that pulling on one section of line between stanchions will not reduce slack in adjacent sections.
- Do not store materials within 6 feet of roof edge unless guardrails are erected at roof edge.
- Use a personal fall restraint or arrest system if working outside of a warning line.
- Connect **points of access**, materials handling and storage areas to the work area by a clear access path formed by two warning lines. When the path to a point of access is not in use, place a rope, wire, or chain across the path where the path intersects with the warning line equal in strength to and at the same height as the warning line (refer to the image below).



Note: When a guardrail system or warning line system must be temporarily removed to perform a specific task, an employee must remain at the opening until the guardrail system or warning line system is replaced. The only duty the employee must perform is to warn persons entering the area of the fall hazard. The employee must be protected from the fall hazard by a personal fall arrest system or personal fall restraint system.

SAFETY MONITOR

A safety monitor system may be used in conjunction with a warning line system to guard against falls during roofing work on low slope roofs. A safety monitor system must be used if all other means of fall protection are not feasible within six feet of the roof edge. This system does not provide a physical means of preventing or arresting falls.

Ensure that the safety monitor system is addressed in the Fall Protection Work Plan, including the name of the safety monitor(s) and their training in both safety monitor and warning line systems. Do not use during adverse weather.

When using a safety monitor system on a roof less than 50 feet wide a warning line is not required.

Employees working outside of the warning line system, (between the forward edge of the warning line and the unprotected sides or edges of the roof), must be readily distinguishable from other members of the crew that are working inside the warning line by wearing highly visible, distinctive, and uniform apparel.

Employees must promptly comply with fall hazard warnings from the safety monitor.

The safety monitor(s) must be a [Competent Person](#) trained in safety monitor and warning line systems, and will:

- Have control authority over the work as it relates to fall protection
- Be instantly distinguishable from members of the work crew (i.e., wear brightly colored vest)
- Perform no other duties while in the role of safety monitor
- Have clear unobstructed view of workers and maintain normal voice communication
- Supervise no more than eight workers at one time
- Warn employees when they may be unaware of a fall hazard or acting in an unsafe manner

SAFETY WATCH

A safety watch system is a fall protection system, in which a Competent Person monitors **one worker** engaged in work other than construction activities on low slope roofs and not within six feet of the roof edge, and when the work is both infrequent and temporary. A safety watch system requires that only two employees are on the roof at a time — one employee is the safety watch and one employee performs the work.

- Employee performing the task must comply with fall hazard warnings from the safety watch.
- No mechanical equipment can be used.
- Do not use during adverse weather.

The employee acting as the safety watch must:

- Be a Competent Person trained in safety watch system requirements
- Have full control over work related to fall protection
- Have clear, unobstructed view of the worker
- Able to maintain normal voice communication
- Perform no other duties while in the role of safety watch

REFER TO THE TABLE BELOW TO ANSWER THESE QUESTIONS:

Where do I put the warning line?

What are the fall protection (FP) options for:

- > **Roofing work near the roof edge?**
- > **Roofing work at other distances from the edge?**
- > **Roofing work when using mechanical equipment?**
- > **Work other than roofing?**

Continued on next page.

Table 1: Low Pitched Roofs – Alternate Fall Protection

TYPE OF WORK	DISTANCE FROM EDGE*	MECHANICAL EQUIPMENT IN USE?	WARNING LINE	SAFETY MONITOR	SAFETY WATCH
ROOFING WORK	0-6 feet	Not applicable	Not allowed	Optional but <i>not</i> recommended	Not allowed
	Greater than 6 feet	No	Optional	Optional	Not allowed
		Yes	At least 6 feet from roof edge in parallel and at least 10 feet from roof edge perpendicular to equipment operation	Optional	Not allowed
CONSTRUCTION WORK (NON-ROOFING)	0-15 feet	Not applicable	Not allowed	Not allowed	Not allowed
	Greater than 15 feet	N/A	Optional	Not allowed	Not allowed
ACTIVITIES OTHER THAN CONSTRUCTION WORK	0-6 feet	Not applicable	Not allowed	Not allowed	Not allowed
	Greater than 6 feet	Not applicable	Not allowed less than 15 feet from the edge	Not allowed	Optional when work is infrequent and temporary
	Greater than 15 feet	Not applicable	Optional	Not allowed	Optional

*Distance from the roof edge where work is occurring

Contact EH&S at 206.543.7262 for more information about fall protection.