

Ladder Safety

University of Tennessee Safety Guide GS-045

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Purpose

The purpose of this procedure is to ensure that the ladders are operated on the University of Tennessee Knoxville campus following OSHA, and other federal, state, and local regulations.

Scope and Applicability

This policy applies to all faculty, staff and students who use or anticipate using a ladder must be able to recognize and avoid ladder hazards and be aware of safe practices in setting up, storing, moving and working with ladders, and comply with this policy.

This policy is intended to provide guidance to faculty, staff and students regarding use of ladders, which covers all types of ladders, including: step, extension and fixed ladders.

Abbreviations and Definitions

Abbreviations

CFR-Code of Federal Regulations

OSHA-Occupational Safety and Health Administration

TOSHA-Tennessee Occupational Safety and Health Administration

Definitions

Extension Ladder: A non-self-supporting portable ladder that is adjustable in length. It consists of two or more sections in guides or brackets that permit length adjustment. Length is designated by the sum of the lengths of each section, measured along the side rails.

Fixed Ladder: A ladder that cannot be readily moved or carried because it is an integral part of a building or structure

Step Ladder: A self-supporting portable ladder, non-adjustable in length, that has flat steps and a hinged back. Length is measured along the front edge of the side rail.

Type	Duty Rating	Use	Load (Person and Equip.)
IAA	Special Heavy Duty	Rugged	375
IA	Extra Heavy Duty	Industrial	300
I	Heavy Duty	Industrial	250
II	Medium Duty	Commercial	225
III	Light Duty	Household	200

Roles and Responsibilities

Ladder users shall:

- Anticipate work hazards and ensure that safeguards are utilized.
- Conduct routine inspections to ensure that equipment is properly maintained.
- Report to their supervisor any equipment that needs to be repaired or replaced.
- Attend ladder safety training.
- Follow all safety guidelines for the use of equipment and according to manufacturer's instructions.

Supervisors shall:

- Ensure all employees who use ladders follow this policy.
- Ensure inspection and maintenance practices for ladders are followed.
- Replace damaged equipment and remove from service.
- Ensure employees are trained to use equipment properly and in accordance with the manufacturer's instructions.

EHS shall:

- Provide program oversight.
- Annually review the Ladder Safety Policy.
- Provide safety awareness training, as needed
- Assist supervisors in identifying hazardous conditions concerning ladders.

Visitors shall

- Comply with UT's Ladder Safety policy and OSHA regulations.

Procedures

Ladder Selection

Choose the right ladder for the height you need to work

Portable Ladders

Ladder Height (ft.)	Maximum reach (ft.)	Height to Gutter or Top Support Point (ft.)
16	15	9 ft. max
20	19	9-13
24	23	13-17
28	27	17-21
32	31	21-25
36	34	25-28
40	37	28-31

*Assume a 5 ft.-6 in. person with a vertical reach of 12 in.

+Support points for extension ladders reflect section overlap, ladder angle, or 3-ft. extension above roof line

Stepladders (folding ladders)

Choose a Stepladder that is no more than 4 ft. shorter than the height you want to reach.

Maximum Height You Need to Reach (in feet)	Stepladder height (in feet)
7	3
8	4
9	5
10	6
12	8
14	10
15	11
16	12
18	14
20	16

Pre-Use Inspection

Ladders should be inspected prior to each use, and after any incident that could affect their safe use.

Ladders with structural defects, such as: broken or missing rungs, cleats, or steps, etc. shall be marked defective or tagged with “Do Not Use” and withdrawn from service until repaired.

OSHA Rules for ALL Ladders

1. Maintain ladders free of oil, grease, and other slipping hazards.
2. Do not load ladders beyond their maximum intended load nor beyond their manufacturer’s rated capacity.
3. Use ladders only for their designated purpose.
4. Use ladders only on stable and level surfaces unless secured to prevent accidental movement.
5. Do not use ladders on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental movement. Do not use slip resistant feet as a substitute for exercising care when placing, lashing, or holding a ladder upon slippery surfaces.
6. Keep areas clear around the top and bottom of ladders.
7. Do not move, shift, or extend ladders while in use.
8. Use ladders equipped with nonconductive side rails if the worker or the ladder could contact exposed energized electrical equipment.
9. Face the ladder when moving up or down.
10. Use at least one hand to grasp the ladder when climbing.
11. Do not carry objects or loads that could cause loss of balance and falling.
12. Secure ladders placed in areas, such as hallways and doorways, or where they can be displaced by workplace activities or traffic to prevent accidental movement.

OSHA Portable Ladder Safety

According to OSHA, falls from portable ladders are one of the leading causes of occupational injury. Below are general rules to follow when using portable ladders:

1. Read and follow all manufacturer’s labels and markings on the ladder.
2. Avoid electrical hazards. Look for overhead power lines before handling a ladder.
3. Avoid using a metal ladder near power lines or exposed energized electrical equipment.
4. Always inspect the ladder prior to using it. If the ladder is damaged, it must be removed from service

and tagged until repaired or discarded.

5. Always maintain a 3-point contact on the ladder when climbing. Keep your body near the middle of the step and always face the ladder when climbing.
6. Only use ladders and accessories for their designated purposes.
7. Ladders must be free of any slippery material on the rungs, steps or feet.
8. Do not use a self-supporting ladder (i.e. step ladder) as a single ladder or in a partially closed position.
9. Do not use the top step/rung of a ladder as a step/rung unless it was designated for that purpose.
10. Use a ladder only on a stable and level surface, unless it has been secured (top or bottom) to prevent displacement.
11. Do not place ladder on boxes, barrels or other unstable bases to obtain additional height.
12. Do not move or shift a ladder while a person or equipment is on the ladder.
13. An extension or straight ladder used to access an elevated surface must extend at least 3 feet above the point of support.
14. Do not stand on the three top rungs of a straight, single, or extension ladder.
15. The proper angle for setting up a ladder is to place its base a quarter of the working length of the ladder from the wall or other vertical surface.
16. A ladder placed in any location where it can be displaced by other work activities must be secured to prevent displacement, or a barricade must be erected.
17. Be sure that all locks on an extension ladder are properly engaged.
18. Do not exceed the maximum load rating of a ladder.

Training

Under the provisions of the OSHA standard 1926.1060(a), employers must provide a training program for each employee using ladders for construction activities. The program must enable each employee to recognize hazards related to ladders and to use proper procedures to minimize these hazards. For example, employers must ensure that each employee is trained by a competent person in the following areas, as applicable:

- The nature of fall hazards in the work area;
- The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used;
- The proper construction, use, placement, and care in handling of all ladders; and
- The maximum intended load-carrying capacities of ladders used. In addition, retraining must be provided for each employee, as necessary, so that the employee maintains the understanding and knowledge acquired through compliance with the standard.

Recordkeeping

An individual training record shall be maintained for each employee and kept for period of employment + 5 years. The training instructor will document/certify the training and evaluation and will include in the documentation the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

References

OSHA: 29 CFR 1926, 1950-1960 Subpart X

OSHA: 1910.26 (Portable Ladder Safety)

Appendices

Appendix A: Ladder Safety Checklist

Disclaimer

The information provided in these guidelines is designed for educational use only and is not a substitute for specific training or experience.

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Appendix A

Ladder Safety Checklist

To prevent falls from ladders, make sure you have the following controls in place:

General Considerations for Ladder Usage

- Use only ladders that are in good condition and designed to handle the climbing job that needs to be done.
- Train employees on proper ladder use.
- Make proper ladder use a performance requirement for the job.
- Require employees to complete a ladder inspection before each use.

Criteria for Ladder Purchase and Care:

- Check OSHA standards for the type of ladder you are using.
- Use only Underwriter's Laboratory approved ladders (will have the UL seal).
- Protect wood ladders with a clear sealer, such as varnish, shellac, linseed oil or wood preservative because paint can hide defects.

Ladder Usage:

- Be sure step ladders are fully open and locked before climbing them.
- Place ladder on a flat, secure surface.
- Place ladder on a hard surface as it will sink into a soft surface.
- Place ladder on non-movable base.
- Lean ladder against a secure surface, not boxes or barrels.
- Do not place ladder in front of a door.
- Position base of ladder one foot away for every four feet of height to where it rests (1:4 ratio).
- Ladder rails should extend at least three feet above top landing.
- Check shoes to ensure they are free of grease or mud.
- Mount the ladder from the center, not from the side.
- Face ladder when ascending or descending, and hold on with both hands.
- Carry tools in pockets, in a bag attached to a belt, or raised and lowered by rope.
- Don't climb higher than the third rung from the top.
- Work facing the ladder.
- Do not overreach, always keep your torso between the ladder rails.
- When using ladder for high places, securely lash or fasten the ladder to prevent slipping.
- Avoid aluminum ladders if work must be done around electrical wires or power lines.