

Ladder Safety Program

Purpose

This program provides the minimum safety requirements for protecting employees from potential injuries associated from ladder use and to ensure that the safety requirements are successfully and consistently implemented.

1. To assign responsibility for the safe use of ladders
2. To establish safe work practices pertaining to ladder usage
3. To ensure compliance with OSHA safety regulations

Scope

- A. This program applies to all West Chester employees
- B. This program applies to all types of ladders including but not limited to: step ladders, step stools, single ladders, articulated ladders, combination ladders, extension ladders, extension trestle ladders, fixed ladders, and mobile ladder stands
- C. Refer to Fall Protection Program for additional information regarding protecting employees and contractors from fall hazards
- D. This program does not cover scaffolds or elevated work platforms which are covered under separate programs

Responsibilities

Environmental Health and Safety (EHS) is Responsible for

- A. Maintaining WCU's Ladder Safety Program and revising the Program as appropriate
- B. Providing ladder safety training as requested and maintaining training records
- C. Performing or coordinating competent person inspections and maintaining inspection records of ladder safety systems
- D. Investigating injuries related to the Ladder Safety Program

Departmental Responsibilities

- A. Ensuring employees have been properly trained before using ladders and that employees adhere to the provisions of this program

- B. Ensuring employees are aware of hazards related to their assigned task
- C. Ensuring employees are provided with and use appropriate personal protective equipment and materials
- D. Shall coordinate maintenance, repairs, or replacement of ladders.

Employee Responsibilities

- A. Selecting the appropriate ladder for the task
- B. Recognizing possible hazards associated with ladder use
- C. Proper inspection, maintenance and storage of ladders
- D. Reporting any damaged ladders
- E. Safe use of ladders
- F. Following appropriate safe work practices, including properly wearing all necessary personal protective equipment

Ladder Construction Requirements

Fixed Ladders

New Fixed Ladders shall at minimum meet the appropriate Occupational Safety and Health Administration (OSHA) and American National Standards Institute (ANSI) A14.1 materials and construction specifications

Newly installed fixed ladders that are 24-feet or longer shall be outfitted with a ladder safety system. Existing fixed ladders that are 24-feet or longer must be retrofit with a ladder safety system prior to 11/18/2036.

Portable Ladders

All portable ladders must be constructed and used in accordance with OSHA regulations and ANSI standards. All commercially manufactured ladders must have a label indicating it meets the requirements of the ANSI standard. When selecting a ladder, the user must consider the proper duty rating, ladder type and length to safely accommodate the combined weight of the user and material.

Portable ladders shall display the appropriate legible ANSI standard compliance marking and other ladder safety markings. Labels/markings must be replaced when they are no longer legible.

LADDER TYPE	DUTY RATING	LOAD CAPACITY	TYPICAL USE
Type IAA	Special Duty	375 pounds	3 ft – 20 ft for heavy duty, such as utilities, contractors, and industrial use
Type IA	Extra Heavy Duty	300 pounds	3ft - 20ft for heavy duty, such as utilities, contractors, and industrial use
Type I	Heavy Duty (Industrial)	250 pounds	3ft – 20ft for heavy duty, such as utilities, contractors, and industrial use
Type II	Medium Duty (Commercial)	225 pounds	3ft – 12ft for medium duty, such as painters, office and light industrial use
Type III	Light Duty (Household)	200 pounds	3ft – 6ft for light duty, such as light household use

Rules for Ladder Use

Employee Training

Supervisors shall ensure that employees who use ladders receive training on how to use them safely. EHS provides training on the safe use of ladders and ladder safety systems.

Retraining

Situations requiring retraining include, but are not limited to, the following:

- A. When changes in the workplace render previous training obsolete or inadequate
- B. When changes in the types of ladders and/or fall protection systems to be used render previous training obsolete or inadequate
- C. When inadequacies in an affected employee's knowledge or use of equipment indicate that the employee no longer has the requisite understanding or skill necessary to use equipment or perform the job safely

Intended Use

Ladder use shall be restricted to the purpose for which the ladder was designed.

- A. The duty rating of the ladder must be clearly indicated on the ladder. The working load to be placed on the ladder including the person and tools must be less than the duty rating
- B. Ladders shall not be climbed by more than one person at a time unless designed to support more than one person
- C. The user shall not step or stand higher than the step or rung indicated on the label marking the highest standing level on a ladder
- D. The user shall not step or stand on the ladder top cap and the top step of a stepladder, or a combination ladder configured as a self-supporting ladder

Angle of Inclination

Portable non-self-supporting ladders should be erected at a pitch of approximately 75 degrees from horizontal for optimum resistance to sliding, strength of the ladder, and balance of the climber. A simple rule for setting up a ladder at the proper angle is to place the base a distance from the wall or upper support equal to one-quarter the effective working length of the ladder. Effective working length is the distance along the side rails from the bottom of the support point of the upper portion of the ladder.

Footing Support

The ladder base shall be placed with a secure footing on a firm, level support surface. Ladder levelers may be used to achieve equal rail support on uneven surfaces. Devices such as shoes, spurs, spikes, combinations thereof, or similar device of substantial design should be installed where required for slip resistance and bearing areas. Where ladders with no safety shoes, spurs, spikes or similar devices are used, a foot ladder board or similar device may be employed. Ladders shall not be used on ice, snow, or slippery surfaces unless suitable means to prevent slipping are employed. Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height.

Top Support

The top of a non-self-supporting ladder shall be placed with the two rails supported equally unless it is equipped with a single support attachment. Such an attachment should be substantial and large enough to support the ladder under load. It should be used when the ladder top support is a pole, light standard, or building corner, or in tree-type operations.

Side Loading

Portable ladders are not designed for excessive side loading, and such abuse of the ladder shall be avoided. The ladder shall be kept close to the work. The user shall not overreach but shall descend and relocate the ladder instead. When using a ladder, the user shall never push or pull unless the ladder is properly secured.

Climbing Ladders

When ascending or descending the ladder, the user shall face the ladder and maintain a firm hold on the ladder. It is preferable to grasp the rungs with an overhand grip as opposed to grabbing the rails. Grip strength is improved while grasping the rungs. Three points of contact with the ladder should be maintained at all times. Recommended climbing pattern is hand, hand – foot, foot. Belt buckle area of the body should remain centered on the ladder and never extend beyond the side rails.

Electrical Hazards

Users are cautioned to take proper safety measures when ladders are used in areas containing electrical circuits. These precautions should prevent any contact or possible contact with an energized, uninsulated circuit or conductor in order to avoid electrical shock or short circuit. Metal ladders and wood ladders with side-rail metal reinforcement wires shall not be used where they would come in contact with exposed energized electric wires. All ladders should be kept

away from electric power lines. It is imperative to also take precautions to avoid contact with electrical circuits with tools that are in use while on the ladder.

Access to Roof or Platform

When a single section or extension ladders are used to gain access to a roof or platform, the top of the ladder shall extend at least 3-feet above the point of support at the eaves, gutter, platform or roofline. The user shall take care when ascending from the ladder to the roof or/platform or descending from the roof/platform to the ladder to avoid tipping the ladder over sideways or causing the ladder base to slide.

Doorways

Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked open, locked, or guarded.

Special Requirements Specific to Ladder Type

Step Ladder

- A. The base must be spread fully open, and the spreaders locked during use
- B. Step ladders must not be used as a Single Ladder or in the partially open position unless designed by the manufacturer for such use
- C. The braces on the rear of a stepladder are not intended for climbing or standing. Note, however, that special stepladders are available with rungs on both the front and rear that can be utilized for climbing and/or used by two employees at the same time (see manufacturer's label to verify)
- D. Users may not climb higher than the label states are safe

Articulated / Combination Ladder

- A. An instruction label appears on each ladder illustrating the locking joints in both the locked and unlocked positions. Each manufacturer has a unique locking hinge design. Each lock must visibly indicate whether it is locked or unlocked. It is important that the user become familiar with the proper operation of the hinge/lock design. Never attempt unlocking or repositioning any of the hinges while standing on the ladder
- B. The hinges/locks may require periodic lubrication. Refer to the labels for more information. When involved in messy work, place a covering over the exposed hinge mechanisms to avoid getting contaminants into them that may cause malfunctions.
- C. Refer to the labels for all acceptable configurations for a given ladder. Configurations not illustrated on the label are not to be used
- D. When used as a Stepladder

1. Refer to the manufacturer's instructions with regard to whether more than one person is permitted on the ladder at the same time when in the stepladder configuration
- E. When used as a scaffold system/scaffold kit configuration
1. May only be used if they are in compliance with the requirements listed in the WCU Scaffold Safety Program

Fixed Ladder

Ladder users must conduct a visual inspection before using the ladder. This inspection is not required to be documented. Criteria for inspection includes:

- A. Ladder base may not obstruct
- B. Fixed ladder cage (if equipped) must be secured to structure/connected/not bent.
- C. Rungs or side rails must not be loose, worn, or damaged.
- D. Fixed ladder gate (if equipped) must swing freely and have no physical damage.
- E. Fixed ladder safety systems (if equipped - rigid rail / rope grab) must be working properly/and have no visible damage.
- F. At least seven inches of clear space (for hands/feet) must be maintained behind ladder rungs (Ensure no new construction such as conductor piping is installed behind ladder)
 1. Only one person at a time is permitted on a fixed ladder
 2. Fall protection (harness, lanyard, etc.) is required to be used when the ladder is equipped with a ladder safety device (i.e., rope grab, rigid rail safety device)

Mobile Ladder Stand

- A. Materials and/or equipment must not be stored on the steps or platform of the unit
- B. Handrails, when provided, should be used while ascending or descending
- C. Access to or egress from a step or platform to any other elevated surface is prohibited unless the unit has been positively secured against movement

Extension Ladder or Straight Ladder

Ladders must be set up as close to a pitch of four to one as possible to prevent accidental displacement. This means that for every four feet up, the base of the ladder must be moved one foot away from the structure.

Care

Inspections

- A. Pre-work Inspection - Prior to using a ladder, The ladder user must conduct a visual inspection. This inspection is not required to be documented

- B. Suspected damaged Inspection -The ladder user must conduct a visual inspection when any situation occurs that could affect the safe use of the ladder. Examples of such situations would include ladders being tipped over, ladders falling from an elevation, ladders being struck by a substantial force, or ladders being used in a corrosive environment. This inspection is not required to be documented

- C. Annual Inspections - All ladders, except for fixed ladders and step stools, must have a documented annual inspection. A sticker/label (See Appendix B) must be attached to the ladder which will document that an annual inspection has occurred. The person designated to conduct this inspection should utilize Appendix B for guidance on inspection criteria.

- D. Damaged Ladders- Broken or bent ladders shall be marked and taken out of service until they are repaired by a competent mechanic or destroyed in such a manner as to render them useless. The user shall not attempt to repair a defective side rail.

- E. Maintenance- Proper ladder maintenance ensures the safe condition of the ladder. Hardware, fittings, and accessories should be checked frequently and kept in proper working condition. All pivoting connections and the rung-lock cam surfaces should be lubricated frequently. All bolts and rivets shall be in place and secure before using a ladder, and no ladders shall be used if any bolts or rivets are missing or if the joints between the steps (or rungs) and the side rails are not tight. Ladders with safety shoes or padded feet which are excessively worn shall be taken out of service until repaired.

- F. Transporting- When transporting ladders on vehicles equipped with ladder racks, the ladders must be properly supported. Overhang of the ladders beyond the support points of the rack should be minimized. The support points should be constructed of material such as wood or rubber-covered pipe to minimize the effects of vibration, chafing and road shock. Securing the ladder to each support point will greatly reduce the damaging effects of road shock.

- G. Storage- Storage racks for ladders not in use should have sufficient supporting points to avoid sagging which can result in warping the ladder. Other materials must not be

placed on the ladder while it is in storage. Ladders stored in a vertical orientation should be secured to prevent tipping over. Use suitable means such as rope, chain, ladder racks, or hanging brackets.

Contractors/Vendors

Contractors and vendors shall be responsible for supplying and using their own portable ladders on West Chester University Campuses.

Contractors are required to follow all applicable OSHA ladder regulations and manufacturer's instructions. Contractors are normally responsible for providing their own ladders and are not permitted to use WCU owned ladders, with the exception of fixed ladders and circumstances listed below.

Contractors will only be allowed to use portable ladders owned by the University in situations which make it impracticable to supply their own. Examples include contractors who utilize air travel or rental vehicles to arrive at the University or contractors whose work is not inherent to the use of a ladder. Use of a University ladder is permitted in these circumstances as long as the WCU work group responsible for hiring the contractor pre-approves/is aware of the need to use a WCU ladder, the ladder user is accompanied by at least one other person (WCU employee and/or a contractor employee), and the ladder has a valid annual inspection.

Contractors are permitted to utilize WCU owned ladders for locations and equipment that present unique hazards or where specialized/specific ladders are required.

Contractors whose work is inherently related to the use of ladders (i.e. work is routinely completed at heights) are not permitted to use University portable ladders. Examples of such work would include construction, renovation, building services, painting, installing signs or banners, etc.

Questions regarding the use of ladders by contractors should be forwarded to EHS.

Recordkeeping

The inspection sticker/label attached to the ladder shall be maintained and legible.

Each department is responsible for maintaining original records and forwarding copies of the following documents to the EHS Department:

1. Annual Ladder Inspections
2. Maintenance Records
3. Training Records

Records that are maintained pursuant to this section must be kept for a minimum of three years unless otherwise indicated.

Definitions

- A. Articulated Ladder / Combination Ladder (dual purpose ladder): a portable ladder with one or more pairs of locking articulated joints which allow the ladder to be set up in several configurations such as a single or extension ladder, a stepladder, a trestle ladder, scaffold or worktable. Its components may be used as Single Ladders
- B. Combination ladder- A portable ladder capable of being used either as a stepladder or as a single or extension ladder. It may also be capable of being used as a trestle ladder or a stairwell ladder.
- C. 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.
- D. Extension ladder- A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets or the equivalent and so arranged as to permit length adjustment.
- E. Fixed ladder- A ladder that is permanently attached to a structure.
- F. Ladder- A device incorporating or employing steps, rungs, or cleats on which a person may step to ascend or descend.
- G. Ladder Safety System- An assembly of components whose function is to arrest the fall of a user, including the carrier and its associated attachment elements (brackets, fasteners, etc.), safety sleeve, body support and connectors, wherein the carrier is permanently attached to the climbing face of the ladder or immediately adjacent to the structure.
- H. Mobile Ladder- A movable, fixed height, self-supporting ladder consisting of wide flat treads in the form of steps which give access to a top step.
- I. Platform- A landing surface that is used as a working or standing location.
- J. Rail- The side members joined at intervals by either rungs or steps.
- K. Stepladder- A self-supporting portable ladder, non-adjustable in length, with flat steps and a hinged base.
- L. Step Stool- A self-supporting, portable ladder that has flat steps and side rails. A step stool includes only those ladders that have a fixed height, do not have a pail shelf, and do not exceed 32 inches in overall height to the top cap, although side rails may extend above the top cap. A step stool is designed so an employee can climb and stand on all of

the steps and the top cap.

- M. Top cap- The uppermost horizontal member of a portable stepladder.
- N. Top step- The first step below the top cap of a portable stepladder. Where a ladder is constructed without a top cap, the top step is the first step below the top of the rails.
- O. Working length- The length of a non-self-supporting portable ladder measured along the rails from the base support point of the ladder to the point of bearing at the top.
- P. Working load- Maximum applied load, including the weight of the user, materials, and tools, that the ladder is to support for the intended use

References/Resources

1. OSHA Subpart D – Walking-Working Surfaces
2. ANSI ASC A14 Ladder Standards
3. National Institute of Occupational Safety & Health (NIOSH) Ladder Safety App
4. West Chester University Fall Protection Program
5. West Chester University Scaffold Safety Program

ATTACHMENT A – ANNUAL PORTABLE LADDER INSPECTION CHECKLIST

	Inspection Criteria	OK	No	N/A
1	Manufacturer’s label present and legible (must show capacity and safety warning labels)			
2	No rungs are missing			
3	The rungs are secure			
4	The rails and rungs are free from sharp edges and splinters			
5	No visible cracks			
6	All hardware is tightly attached and present			
7	No bolts, nails, screws, or other hardware stick out to cause injury			
8	The ladder is not broken, cracked, misshapen, splintered, rotted, or warped			
9	The braces, rails, and spreader arms are not broken, cracked, misshapen, splintered, rotted, loose, or warped			
10	The feet and treads of the ladder are free from damage, rust, wear and are properly attached			
11	The extension locks seat properly and securely			
12	Moving parts are moving freely (no binding)			
13	Chains, cords, pulleys, ropes and locks are not damaged and working properly			
14	All attachments (pail shelf, tool rest, etc.) are free from damage, loose parts, and wear			
15	No makeshift repairs or alterations			
16	No discoloration or fading due to UV rays, heat, chemicals, etc.			
Additional criteria for <u>mobile ladders</u>				
17	Wheels in good condition / move freely			
18	Wheel locks in working condition			
19	Hand rails and guardrails in good condition (not bent, loose, broken, etc.)			

COMMENTS:

***** Ladders with defects must be clearly marked “Dangerous-Do Not Use” or with similar wording and removed from service *****

Appendix B

Ladder Examples (Page 1 of 3)

	<p>Manufacturer Label (example)</p>
	<p>Inspection sticker/label</p> <p>Available from EHS.</p>

Common parts of step ladder (example)



Appendix C

Ladder Examples (Page 2 of 3)

<p>push knob locking hinge inner ladder section ladder side rail spring loaded "J" lock outer ladder section rung / step end cap</p> <p>dynamic hinge</p>	<p>Common parts of articulated / combination ladder (example)</p>
	<p>Single Ladder / Straight Ladder</p>
	<p>Extension Ladder</p>
	<p>Articulated / Combination Ladder</p>
	<p>Mobile Ladder Stand</p>

Appendix C
Ladder Examples (Page 3 of 3)

	Extension Trestle Ladder
	Fixed Ladder
	Step Stool

Appendix D- Ladder Safety Awareness

Ladders are a potential source of workplace injuries. Most of these incidents can be prevented when proper safety precautions are implemented.

- A. Ladders must be used in accordance with manufacturer's instructions
- B. Users must inspect the ladder prior to using it. If the ladder is damaged, it must be removed from service and tagged until repaired or discarded
- C. Ladders must have all manufacturer's labels legible
- D. Ladders must be faced when ascending and descending
- E. Users must maintain grasp of the ladder with at least one hand when ascending and descending (three points of contact)
- F. Users may not carry items that could cause a loss of balance while ascending and descending
 - 1. A tool belt, backpack, etc., must be used to carry tools, equipment and materials when necessary
- G. When ascending, descending or working from a ladder the body must be near the middle of the rungs to prevent accidental displacement
- H. Ladders must not be loaded beyond their maximum intended load as found on the label.
 - 1. Maximum intended load is the weight of the employee, tools, equipment and materials that are carried
 - 2. When using a wooden ladder attention should be paid to the weight limit (typically have lower weight limits)
- I. Ladders are only to be used on stable and level surfaces unless they are secured or stabilized to prevent accidental displacement
- J. Ladders must not be placed on other objects such as boxes, barrels, scaffolds, or other unstable bases in an effort to achieve additional height
- K. Ladders are not to be moved, shifted, or extended during use
- L. Ladders placed in locations such as passageways, doorways, or driveways, where they could be displaced by other activities or traffic must be
 - 1. Secured to prevent accidental displacement

2. Guarded by a temporary barricade, such as a row of traffic cones or caution tape, to keep the activities or traffic away from the ladder
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- M. Ladders placed on slippery surfaces must be secured and stabilized to prevent accidental displacement
 - N. The top of a non-self-supporting ladder must be placed so that both side rails are supported, unless the ladder is equipped with a single support attachment
 - O. Portable ladders used to gain access to an upper landing surface must have rails that extend at least three feet above the upper landing surface
 - P. Ladders and ladder sections must not be tied or fastened together to provide added length unless they are specifically designed by the manufacturer for such use.
 - Q. Ladders must not be accessed from the side unless the ladder is secured from accidental displacement
 - R. Prior to climbing, users should look overhead for possible obstructions
 - S. Ladders must be non-conductive when performing electrical tasks and placed at least 10 feet from overhead lines

Appendix E – Step Stool Safety Awareness (Page 1 of 2)

Instructions: Reviewing this document is required for employees whose only ladder use involves using step stools such as these types pictured below:

Common examples of step stools:



Reviewing this document is not required if only using these types of step stools:



Ladders are a potential source of workplace injuries. Most of these incidents can be prevented when proper safety precautions are implemented.

A. Proper Use

1. Step stools are intended for use by one person.
2. A step stool requires level ground support for all four of its side rails.
3. A step stool must not be used unless its base is spread fully open and the spreaders are locked. Step stools are not to be used as single ladders or in the partially open position.
4. In order to prevent tipping over sideways due to over-reaching, the user must climb or work with the body near the middle of the steps or top cap. The step stool should be set up close to the work. Never attempt to move the step stool without first descending, relocating the step stool, and then re-climbing. Do not attempt to mount the step stool from the side or step from one ladder or step stool to another unless the step stool is secured against sideways motion.
5. When ascending or descending the step stool, users must always face the step stool.
6. The braces on the rear of a step stool are not intended for climbing or standing and must not be used for that purpose.

7. The anti-slip feet at the bottom of the step stool side rails must be present and in good condition prior to using. The step stool must not be used on ice, snow or slippery surfaces unless suitable means to prevent slipping is employed.
8. A step stool must never be placed upon other objects such as boxes, barrels, scaffolds, or other unstable bases in an effort to obtain additional height.
9. Do not wear sandals, flip flops, or footwear with leather / smooth soles. Clean mud or other slippery substances off of shoes before climbing.

B. Proper Care

1. A thorough inspection must be made when the step stool is initially purchased and each time it is placed into service. Clean the climbing and gripping surfaces if they have been subjected to oil, grease or slippery materials. Working parts, bolts, rivets, step-to-side rail connections, and the condition of the anti-slip feet (safety shoes) shall be checked. If structural damage, missing parts, or any other hazardous defect is found, the step stool must not be placed into service and discarded.
2. A step stool exposed to excessive heat, as in the case of fire, may have reduced strength. Similarly, step stool exposed to corrosive substances such as acids or alkali materials may experience chemical corrosion and a resulting reduction in strength. Remove these step stool from service.
3. Step stool with bent or broken side rails must not be placed into service.
4. Do not store other materials on the step stool while it is in storage.
5. In the event a step stool is discarded, it must be destroyed in such a manner as to render it useless. Another person must not be afforded the opportunity to use a step stool that has been deemed unsafe.