



Policy Title:	Ladder Safety
Policy Number:	UNIV-427
Revision Date:	July 2019
Policies Superseded:	1868; FINA-712
Policy Management Area(s):	Environmental Health and Safety

SUMMARY:

This policy covers the minimum requirements for the care and use of portable and fixed ladders to ensure proper and safe usage as established by Environmental Health and Safety (EHS).

POLICY:

I. Definitions

- A. PLEASE NOTE: The most pertinent definitions for all ladder types are shown below. For the most comprehensive list, refer to ANSI Definitions found in Standards ANSI A.14.1-1994; ANSI A14.2-1990; ANSI A14.4-1992; ANSI 14.5-1992; and OSHA Standards 29 CFR 1910.21, .25, .26 and .27.
- B. Angle of inclination: the preferred pitch of portable nonself-supporting ladders.
- C. Back leg (rear rail): the support members of a self-supporting portable ladder back section. The back legs are joined by rungs, bars, rear braces or other bracing to form the back section.
- D. Cleats: ladder crosspieces of a rectangular cross section placed on edge upon which a person may step while ascending or descending a ladder.
- E. Combination ladder: a portable ladder capable of being used either as a stepladder or as a single or extension ladder.
- F. Combination ladder: a portable ladder capable of being used either as a stepladder, or as a single or extension ladder.
- G. Double-front ladder: a self-supporting ladder, nonadjustable in length, consisting of two (2) sections intended for climbing on both sides.
- H. Duty rating: the combination of factors, including but not limited to, ladder type and design features that imply service capability.

1. Type 1, industrial stepladder: designed for heavy duty work, such as for utilities, contractors and industrial use.
 2. Type II, commercial stepladder: designed for medium duty work, such as offices, and light industrial use. Not to be used at CCU.
 3. Type III, household stepladder: designed for household use. Not to be used at CCU.
- I. Extension ladder: a non-self-supporting portable ladder that is adjustable in length. It consists of two (2) or more sections traveling in guides or brackets arranged so as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.
- J. Fastening: a device to attach a ladder to a structure, building or equipment.
- K. Fiberglass ladder: a ladder whose side rails are constructed of fiberglass. The crosspieces, called steps, rungs or cleats, may be constructed of metal, reinforced plastics or other suitable materials. This term does not denote the absence of all metallic elements because, even in ladders with side rails and crosspieces manufactured of fiberglass, the hardware and fasteners may be metallic.
- L. Fixed ladder: a ladder permanently attached to a structure, building or equipment.
- M. Grab bars: individual handholds placed adjacent to or as an extension above ladders for the purpose of providing access beyond the limits of the ladder.
- N. Ladder: an appliance usually consisting of two (2) side rails joined at regular intervals by crosspieces, called steps, rungs or cleats, on which a person may step while ascending or descending.
- O. Ladder foot, shoe or skid-resistant bearing surface: the component of ladder support that is in contact with the lower supporting surface.
- P. Ladder safety device: any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls and which may incorporate such features as life belts, friction brakes and sliding attachments.
- Q. Marking: any sign, label, stencil or plate, of a primary hazard or informational character or both, affixed, painted, burned, stamped or embossed on the ladder surface.
- R. Maximum extended length or maximum working length: the total length of the extension ladder when the middle or intermediate and top or fly sections are fully extended (maintaining the required overlap).
- S. Permanent deformation (set): that deformation remaining in any part of a ladder after all loads have been removed.

- T. Pitch: the included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.
- U. Platform or podium ladder: a specialized stepladder with a fixed work platform surrounded by a guardrail and which can be used safely while maintaining only two points of contact with the ladder. (See II.C.17.)
- V. Rail ladder: a fixed ladder consisting of side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure or equipment.
- W. Reinforced plastic ladder: a ladder whose side rails are constructed of reinforced plastics. The crosspieces, called steps, rungs or cleats may be constructed of metal, reinforced plastic or other suitable materials. This term does not denote the absence of all metallic elements because, even in ladders with side rails and crosspieces manufactured of reinforced plastics, the hardware and fasteners may be metallic.
- X. Rungs: rungs are ladder crosspieces of circular or oval cross-section on which a person may step while ascending or descending.
- Y. Stepladder: self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.
- Z. Single ladder: a single ladder is a nonself-supporting portable ladder, nonadjustable in length, consisting of but one (1) section. Its size is designated by the overall length of the side rail.
- AA. Special-purpose ladder: a portable ladder that represents either a modification, or a combination of design or construction features in one of the general-purpose types of ladders previously defined, in order to adapt the ladder to special or specific uses.
- BB. Steps: steps are the flat crosspieces of a ladder on which a person may step while ascending or descending.
- CC. Step stool (ladder type): a self-supporting, foldable, portable ladder, nonadjustable in length, 32 inches or less in overall size, with flat steps and without a pail shelf, designed so that the ladder top cap as well as all steps can be climbed on. The side rails may continue above the top cap.
- DD. Visual damage: damage evident by visual inspection.
- EE. Visual inspection: inspection by the eye without recourse to any optical devices except prescription eyeglasses.

- FF. Working load: the maximum applied load, including the weight of the user, materials and tools, which the ladder is to support for the intended use.

II. Ladder Safety Program

- A. Purpose: The purpose of this policy is to provide reasonable safety for life, limb and property in regard to ladder usage. The safety of all students, employees and contractors is the foremost objective and requirement of this policy as set forth by the University and as defined by OSHA General Industry Standards 29 CFR 1910.25, 1910.26 and 1910.27, and OSHA Construction Standards 29 CFR 1926.1053 Subpart X.
- B. Scope: This program covers the minimum requirements for the care and use of portable and fixed ladders in order to ensure safety under normal use conditions. The most common type of portable ladders are made of wood, metal, fiberglass or reinforced plastic. It is not the purpose of this program to specify all the details of construction for all portable ladders. The scope is to provide policy on the most common types of ladders used at CCU. Detailed portable ladder specification requirements are provided by the American National Standard Institute, ANSI A14.1-1994 and ANSI A14.2-1990.
- C. Minimum ladder care and use of ladders requirements: To ensure student, employee and contractor safety, as well as ladder serviceability, the following precautions on the care of ladders shall be observed:
1. Metal and wooden portable ladders are generally NOT allowed to be used at CCU; only fiberglass or reinforced plastic portable ladders are permissible. Fiberglass and reinforced plastic ladders must follow the previously referenced OSHA and ANSI standards (II.A. and B.).
 2. All portable ladders used at CCU must have a minimum duty rating of Type 1A where the total weight on the **ladder** does not exceed 300 pounds.
 3. Manufacturer's label (marking) must be intact and legible on each portable ladder. Any ladder not meeting this requirement must be removed from service and either repaired back to manufacturer's specification by a competent person or destroyed. Care should be taken to prevent damage to manufacturer's safety labels.
 4. All portable ladders shall be visually inspected prior to each use by the employee using the ladder. At a minimum, ladders should be visually inspected on a monthly basis.
 5. If a ladder is involved in any of the following scenarios, immediate ladder inspection is necessary.
 - a. If a ladder tips over, inspect the ladder for side rail dents or bends, or excessively dented rungs. Check all rung-to-side-rail connections. Check hardware connections and rivets for shear.
 - b. If ladders are exposed to oil and grease, equipment should be cleaned regularly to remove oil, grease or slippery materials. This

can easily be done with a grease-cutting cleaner or by steam cleaning.

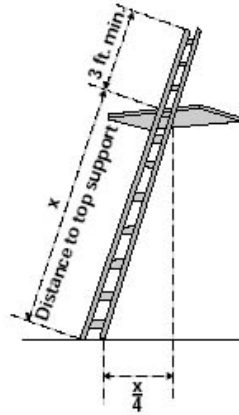
8. Ladders with broken or missing steps, rungs or cleats, broken side rails, or other damage must not be used. Such a ladder must be taken out of service immediately and repaired to OSHA and manufacturer's specifications by a competent person. Improvised repairs shall not be made.
9. A ladder that cannot be properly repaired must be destroyed in a manner so as to prevent reuse.
10. Ladders must not be used in a horizontal position as a platform, runway or scaffold. Ladders must not be used as guy-wire supports, braces or skids, or for other than their intended purpose.
11. Ladders will be maintained in good condition at all times. The joint between the steps and side rails must be tight. All hardware and fittings must be securely attached, and the movable parts shall operate freely without binding or undue play.
12. Ladders shall not be placed in front of a door that is opened as a matter of function unless the door is blocked open, locked and/or guarded.
13. Ladders shall not be placed on boxes, barrels or other unstable surfaces to obtain additional height.
14. Ladders shall not be spliced together to provide longer reach or sections.
15. Portable ladders should be equipped with nonslip bases when there is a hazard of slipping. Nonslip bases are not intended as a substitute for care in safely placing, lashing or holding a ladder that is being used upon an oily, metal, concrete or slippery surface.
16. Ladders which are designed for one person shall not be used by more than one person at a time. Specially designed ladders with larger dimensions and capacity must be utilized when use by more than one person at the same time is anticipated.
17. When ascending or descending a ladder, the climber must face the ladder and maintain at least three points of bodily contact (legs and arms) with the ladder. While working from a ladder, three points of bodily contact should also be maintained.

D. Safe use of ladders on or around electrical equipment

1. Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards. Further information can be found in OSHA 29 CFR 1910.333.
2. Metallic or metal-type ladders must NOT be used at CCU around any sources of electrical hazard.
3. Portable ladders shall have nonconductive side rails if they are used where the employee or the ladder could contact exposed energized parts.

E. General specifications for extension ladders

1. A simple rule for setting up an extension ladder at the proper angle is to place the base a distance from the vertical wall equal to one-fourth (1/4) the working length of the ladder. For a ladder working length of 12 feet, the ladder base should be placed three (3) feet from the wall. See diagram below where x equals the working length of the ladder.



2. The following safety precautions shall be observed in connection with the use of extension ladders:
 - a. Safety feet and other auxiliary equipment shall be kept in good condition to ensure proper performance.
 - b. Extension ladders shall be so placed that the side rails have a secure footing. The top rest for portable ladders shall be rigid and shall have ample strength to support any applied load.
 - c. Portable ladders with reinforced rails shall be used only with the metal reinforcement on the underside.
 - d. No ladder should be used to gain access to a roof unless the top of the ladder extends at least three (3) feet above the point of support at the eave, gutter or roofline.
 - e. On two-section extension ladders, the minimum overlap for the two (2) sections in use shall be as follows:

Size of ladder in feet	Overlap in feet
Up to and including 36	3
Over 36 up to and including 48	4 (use not recommended)
Over 48 up to and including 60	5 (use not recommended)

- f. **For access to heights greater than 36 feet, the use of a mechanical lifting device is highly recommended.**
- g. The bracing on the back legs of stepladders is designed solely for increasing stability and not for climbing.
- h. The ladder base section must be placed with a secure footing.
- i. The top of the ladder must be placed with the two (2) rails supported unless equipped with a single support attachment.

- j. Ladders must not be tied or fastened together to provide longer sections. They must be equipped with the hardware fittings necessary if the manufacturer endorses extended uses.
 - k. Metal bearings of locks, wheels, pulleys, etc., must be lubricated frequently.
 - l. Ladders with frayed or badly worn rope shall be taken out of service until the rope is replaced.
- F. General specifications for stepladders
 - 1. The length of a stepladder is measured by the length of the front rail. To be classified as a standard-length ladder, the measured length shall be within plus or minus one-half (1/2) inch of the specified length.
 - 2. Stepladders shall not exceed 20 feet in length.
 - 3. The bottoms of the four (4) rails must be equipped with insulating non-slip footing material for the safety of the user.
 - 4. The spreader bar (ladder section locking device) should be of good repair and not excessively loose, bent or twisted.
 - 5. The top and the last step (rung) of the stepladder shall not be used as a step or seat.
 - 6. A stepladder shall not be used for a straight ladder. A stepladder must have both sections securely footed on the ground with the spreader bar fully extended.
 - 7. Stepladders shall not be used to gain access to roofs or elevated levels. Use an extension ladder.
- G. Protection of ladders from deterioration
 - 1. Metal fixed ladders and appurtenances shall be painted or otherwise treated to resist corrosion and rusting when location demands. Ladders formed by individual metal rungs embedded in concrete that serve as access to pits and to other areas under floors are frequently located in an atmosphere that causes corrosion and rusting. To increase rung life in such an atmosphere, individual metal rungs must have a minimum diameter of one (1) inch, or must be painted or otherwise treated to resist corrosion and rusting.
 - 2. Fiberglass or plastic reinforced portable ladders should be protected from ultraviolet (UV) radiation damage from the sun.
 - 3. When different types of materials are used in the construction of a ladder, the materials used will be treated so as to have no destructive effect upon the other materials.
- H. Fixed ladders
 - 1. All fixed ladders must comply with all OSHA 29 CFR 1919.27 regulations.