



ENVIRONMENTAL HEALTH & SAFETY

Ladder Safety and Inspection Program

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UNM'S COMMITMENT TO SAFETY

Safety is a core value of the University of New Mexico. UNM is committed to creating and fostering a culture of safety within the community. To learn more visit <https://ehs.unm.edu/culture-of-safety.html>.

ACRONYMS & DEFINITIONS

| | |
|---------------------------|--|
| Angle of inclination | The preferred pitch of portable non-self-supporting ladders. |
| Cage | An enclosure that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder. |
| Extension Ladder | A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. |
| Ladder Foot | The part of the ladder support that is in contact with the lower supporting surface. |
| Pitch | The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side. |
| 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. |
| Reinforced plastic ladder | A device whose side rails are constructed of reinforced plastics. |
| Side-step ladder | A ladder from which a person getting off at the top must step sideways from the ladder in order to reach the landing. |
| Stepladder | A stepladder is a self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. |
| 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. |

| | |
|---------|--|
| | |
| 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. |
| EHS | Environmental Health and Safety |
| FM | Facilities Management |

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1. INTRODUCTION

Falls are a leading cause of death and injury in the construction and maintenance occupations. It is important that ladders be used safely and that workers maintain their ladders. This program establishes the minimum requirements for the storage, maintenance, inspection, and use of portable ladders.

For further information see the OSHA Standards 29 CFR 1910.25, .26 and .27 and the most recent version of the American National Standard Institute, (ANSI A14.-5).

2. SCOPE

This program applies to all UNM employees, contractors, vendors, and visitors. It is designed to assist in recognizing hazards associated with ladders and proper ladder safety requirements.

3. ROLES AND RESPONSIBILITIES

3.1. Environmental Health and Safety

- 1) Implements and maintains this program
- 2) Provides ladder safety training
- 3) Performs periodic inspections of facilities containing machinery and equipment
- 4) Initiates corrective action if program is not being followed

3.2. Facilities Management

- 1) Implements and enforces this program with all personnel and vendors
- 2) Performs inspection and replacement of ladders

3.3. Supervisors

- 1) Implement and enforce this program with all personnel and vendors
- 2) Instruct their employees to the content of this program
- 3) Ensure that formal training is provided as required by the program

3.4. Employees

- 1) Adhere to the requirements and restrictions set forth by this program
- 2) All stakeholders have the right to stop work if an unsafe condition arises within the work environment.

4. LADDER SELECTION

The type and composition of a ladder necessary for a particular job shall be determined based upon the specific task and requirements. Do not use electrically conductive (e.g. aluminum) ladders for electrical work or near live electrical parts.

When selecting a ladder, ensure that the ladder has an adequate duty rating to support the combined weight of the user and materials; i.e. that the ladder can hold not only the user, but the weight of clothing, protective equipment, and any supplies carried or stored on the ladder. The ladder duty ratings are as follows:

4.1. Industrial

- 1) **Type IAA** (Extra Heavy Special Duty Industrial):
 - a. For heavy duty, such as utilities, contractors, and industrial use
 - b. Load capacity not to exceed 375 pounds.
- 2) **Type IA** (Extra Heavy Duty Industrial):
 - a. For heavy duty, such as utilities, contractors, and industrial use.
 - b. Load capacity not to exceed 300 pounds.

4.2. Commercial

- 1) **Type I** (Industrial):
 - a. For heavy duty, such as utilities, contractors, and industrial use.
 - b. Load capacity not to exceed 250 pounds.
- 2) **Type II** (Commercial):
 - a. For medium duty, such as painters, offices, and light industrial use.
 - b. Load capacity not to exceed 225 pounds.

4.3. Residential

- 1) **Type III** (Household):
 - a. For light duty, such as light household use.
 - b. Load capacity not to exceed 200 pounds.

4.4. Non-Permitted Ladders for UNM

- 1) Type III Ladders **are not acceptable** for use on UNM Campus
- 2) Wooden ladders **are not allowed** on UNM Projects.

5. STORAGE OF PORTABLE LADDERS

- 1) Ladders may be stored near the place of use, but never stored in a manner or place that is accessible to students or the general public.

- 2) As a best practice, ladders should be stored in a location out of direct sunlight and away from chemicals or materials that may cause decay or damage.
- 3) Ladders must be stored so as not to cause a hazard to personnel in the storage area. Ladders should be secured against movement or being inadvertently toppled if stored upright. If stored horizontal, ladders must be stored in a manner that does not create a trip hazard.
- 4) Ladders may be carried on vehicles where their placement does not cause a hazard. All ladders shall be secured during transport to prevent damage.
- 5) Materials shall never be stored on a ladder or hung from a ladder in storage.

6. CARE AND MAINTENANCE OF PORTABLE LADDERS

Ladders shall always be maintained and kept in good condition. Only repairs that restore the ladder to the manufacturer's design specifications are permitted under this program. The following components may be maintenance or repaired if found to be inadequate for use:

- 1) Tighten joints designed to be tight; the joint between steps and side rails and all hardware and fittings need to be securely attached.
- 2) Replace frayed or badly worn rope.
- 3) Replace safety feet and other auxiliary equipment with manufacturer approved parts.
- 4) Clean rungs and remove any grease, oil, or other slippery materials.
- 5) Ladders that cannot be repaired are to be disposed of in accordance with [Section 10 of this this program](#).

7. INSPECTION OF PORTABLE LADDERS

- 1) Each user shall inspect the ladder prior to use for the following:
 - a. Rungs tightly affixed.
 - b. Treads are free of friction reducing materials (e.g., oil/grease).
 - c. Locks, cleats, feet, wheels, and other hardware are able to operate freely.
 - d. Rope and other hardware in good condition.
 - e. Signage or safety labels are readable.
- 2) Ladders shall be inspected after any event that could impact ladder integrity (i.e. ladder tips over, falls, or is dropped)
- 3) Any ladder found to have developed defects shall be withdrawn from service for destruction and tagged or marked as "Dangerous, Do Not Use."

- 4) Ladders with broken or missing steps, rungs, cleats, side rails, or other faulty equipment shall not be used; improvised repairs shall not be made.

8. USE OF PORTABLE LADDERS

8.1. General Use

- 1) Select a ladder that is the proper length and “duty rating” for the intended work
- 2) Ladders shall only to be used for their intended purpose
 - a. Ladders shall not be used in a horizontal position as platforms, runways or scaffolds.
 - b. Ladders made by fastening cleats across a single rail shall not be used.
 - c. Ladders shall not be used as guys, braces or skids.
 - d. Portable ladders with reinforced rails shall be used only with the metal reinforcement on the underside.
 - e. Ladders designed for one person shall not be used by more than one person at a time.
- 3) Setup the ladder on a flat, level surface that is capable of holding the expected weight without sinking
 - a. Do not place ladders where they can be accidentally struck or displaced.
 - b. Do not place ladders in front of doors opening toward the ladder unless the door is blocked open, locked, or guarded
 - c. Do not place ladders on boxes, barrels, or other unstable bases or spliced together to obtain additional height
 - d. Portable extension ladders shall be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter ($\frac{1}{4}$) of the working length of the ladder (the length along the ladder between the foot and the top support).
 - e. Ladders shall not be moved, shifted, or extended while occupied
- 4) The ladder base section must be placed with a secure footing. The ladder shall be so placed as to prevent slipping, or it shall be tied or held in position.
 - a. The user should equip all portable ladders 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 oily, metal, concrete or slippery surfaces
- 5) Face the ladder when ascending or descending
- 6) Use only the manufactured steps for ascending or descending. The bracing on the back legs of step ladders is designed solely for increasing stability and not for climbing.
- 7) Maintain 3 points of contact while ascending or descending the ladder

- a. The 3-point technique ensures that if one were to slip with any one hand or foot, there would remain two stable contact points from which to recover and prevent a fall.
 - b. When transferring weight from ladder to a platform, the three points of contact are even more important for this awkward position.
- 8) Be mindful of personnel below the ladder that can be hit by falling debris. Workers must wear a hardhat to work below the ladder
 - 9) When using a ladder to gain access to a roof, the ladder must extend at least three feet above the point of support, at eave, gutter or roofline. The pail shelf, top platform or top step shall not be used to gain additional height or use as a step.
 - 10) While on the ladder, perform work within eighteen inches of the rail. Do not overreach.
 - a. NOTE: A simple rule is to keep the center of your belt buckle between the ladder rails.

8.2. Special Requirements for Landing Platforms

- 1) When ladders are used to ascend to heights exceeding 20 feet (except on chimneys), landing platforms shall be provided for each 30 feet of height or fraction thereof, except that, where no cage, well or ladder safety device is provided, landing platforms shall be provided for each 20 feet of height or fraction thereof. Each ladder section shall be offset from adjacent sections. Where installation conditions (even for a short, unbroken length) require that adjacent sections be offset, landing platforms shall be provided at each offset.
- 2) Where a person has to step a distance greater than 12 inches from the centerline of the rung of a ladder to the nearest edge of structure or equipment, a landing platform shall be provided. The minimum step-across distance shall be 2 ½ inches.
- 3) All landing platforms shall be equipped with standard railings and toe boards, so arranged as to give safe access to the ladder. Platforms shall be not less than 24 inches in width and 30 inches in length.
- 4) One (1) rung of any section of ladder shall be located at the level of the landing laterally served by the ladder.
- 5) Where access to the landing is through the ladder, the same rung spacing as used on the ladder shall be used from the landing platform to the first rung below the landing.

8.3. Ladder Extensions

- 1) 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.
- 2) The side rails of through or side-step ladder extensions shall extend 3½ feet above parapets and landings. For through ladder extensions, the rungs shall be omitted from the extension and shall have not less than 18 inches nor more than 24 inches clearance between rails.
- 3) For side-step or offset fixed ladder sections, at landings the side rails and rungs shall be carried to the next regular rung beyond or above the 3½ feet minimum.

8.4. Safe Use of Ladders Around Electrical Equipment

- 1) Metallic or metal type ladders shall NOT be used around electrical energy, components and sources.
- 2) See the UNM Electrical Program for details about this procedure.

9. FIXED LADDERS

9.1. General Requirements

Guidelines include but are not limited to these requirements:

- 1) The minimum design live load shall be a single concentrated load of 200 pounds.
- 2) The live loads imposed by persons occupying the ladder shall be considered to be concentrated at such points as will cause the maximum stress in the structural member being considered.
- 3) The weight of the ladder and attached appurtenances together with the live load shall be considered in the design of rails and fastenings.
- 4) All rungs shall have a minimum diameter of three-fourths ($\frac{3}{4}$) inch for metal ladders.
- 5) The distance between rungs, cleats and steps shall not exceed 12 inches, and shall be uniform throughout the length of the ladder.
- 6) The minimum clear length of rungs or cleats shall be 16 inches.
- 7) The preferred pitch of fixed ladders shall be considered to come in the range of 75° and 90° with the horizontal.

9.2. Ladder Safety Devices

- 1) Fixed ladders that extend more than 24 feet (7.3 m) above a lower level must meet the following requirements:
 - a. **Existing fixed ladders.** Each fixed ladder installed before November 19, 2018 is equipped with a personal fall arrest system, ladder safety system, cage, or well.
 - b. **New fixed ladders.** Each fixed ladder installed on and after November 19, 2018, is equipped with a personal fall arrest system or a ladder safety system.
 - c. **Replacement.** When a fixed ladder, cage, or well, or any portion of a section thereof, is replaced, a personal fall arrest system or ladder safety system is installed in at least that section of the fixed ladder, cage, or well where the replacement is located.
- 2) All ladder safety devices, such as those that incorporate life belts, friction brakes and sliding attachments, shall meet the design requirements of the ladders which they serve.

10. DISPOSAL OF LADDERS

Ladders must be made inoperable prior to disposal by cutting vertically down the middle of the rungs.

ATTACHMENT A: LADDER INSPECTION FORM

| Ladder Inspection Form | | | | | | |
|---|------------------|-----------------|--|-------------------------------------|--------|--|
| Company Name | | | | | | |
| Ladder ID: | | Department: | | | | |
| Inspector: | | Date: | | | | |
|  | Stepladder | Size: | Fiberglass | Aluminum | | |
| | | | | | Yes No | |
| | | | Steps: | Loose, Cracked, Bent or Missing | | |
| | | | Rails: | Cracked, Bent, Split or Frayed Rail | | |
| | | | Labels: | Missing or Not Readable | | |
| | | | Pail Shelf: | Loose, Bent, Missing or Broken | | |
| | | | Top: | Cracked, Loose or Missing | | |
| | | | Spreader: | Loose, Bent or Broken | | |
| | | | General: | Rust, Corrosion or Loose | | |
| | | | Other: | Bracing, Shows, Rivets | | |
| | | <u>Actions:</u> | Ladder tagged as damaged & removed from use Ladder is in good condition | | | |
| Circle Areas of Damage | | | | | | |
|  | Extension Ladder | Size: | Fiberglass | Aluminum | | |
| | | | | | Yes No | |
| | | | Steps: | Loose, Cracked, Bent or Missing | | |
| | | | Rails: | Cracked, Bent, Split or Frayed Rail | | |
| | | | Labels: | Missing or Not Readable | | |
| | | | Rung Locks: | Loose, Bent, Missing or Broken | | |
| | | | Hardware: | Missing, Loose or Broken | | |
| | | | Shoes | Worn, Broken or Missing | | |
| | | | Rope/Pulley | Loose, Bent or Broken | | |
| | | | General: | Rust, Corrosion or Loose | | |
| | | Other: | Bracing Rivets | | | |
| | | <u>Actions:</u> | Ladder tagged as damaged & removed from use Ladder is in good condition | | | |
| Circle Areas of Damage | | | | | | |












Ladder Safety Program R2.1

Final Audit Report

2024-05-30

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