CAL POLY

Environmental Health and Safety,
Risk Management (EHSRM)

LADDER SAFETY PROGRAM

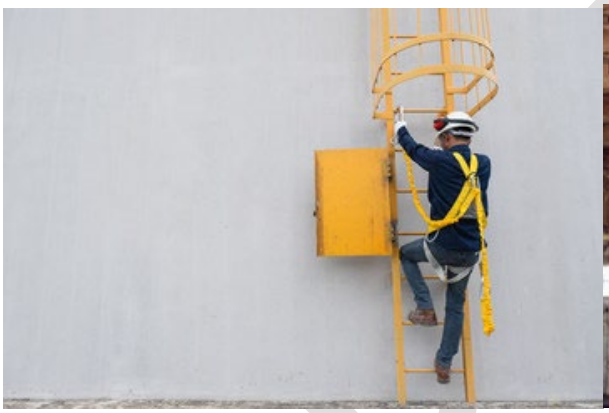

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Table of Contents

Contents

Purpose

The California State University, San Luis Obispo (SLO) developed this program to describe all aspects of ladder safety including a ladder safe-use policy, personnel accountability, hazard assessment and proper ladder selection, safe work practices, training requirements, and record keeping.

The department owning the ladders is responsible for the proper selection of ladders to be kept in their ladder inventory based upon an assessment of work tasks. In addition, Departments are responsible for assigning training to their personnel who use ladders, ensuring records of training are maintained in the Learning Management System (LMS) or department records, and for performing annual inspections and maintenance of all ladders under their ownership/control.

Scope and Application

This Program applies to any use of ladders three (3) feet in height/length or greater by employees of the University as part of their normal work activities. This includes temporary employees and students performing research related activities in field stations and remote research facilities.

Roles and Responsibilities

All Ladder Users

Every ladder user:

- Is trained on and applies Ladder Safe Work Practices for ladder use outlined in this program.
- Always selects and uses a ladder in a safe manner.
- Inspect ladders before use.
- Alerts supervisor when ladders need repair/replacement.
- Assesses work to determine if fall protection should be worn and seeks alternative access methods instead of ladders if need be.
- Refuses to use a ladder if they think it is unsafe and instead uses a safer method such as a scaffold, lift pod or bucket truck.

Departments that have program users – Specifically the PI or other manager/supervisor

The department owning the ladders must:

- Ensure ladders are inspected annually.
- Render unusable and then dispose of any ladders that are not repairable.
- Assign training to all personnel using their ladders as required by the “Training” section of this Program.
- Keep attendance records of all training.

- Assure ladder work-tasks are evaluated for hazards and that work tasks requiring fall protection to be worn are identified.
- Provide alternative access when a ladder user determines use of a ladder is unsafe due to required work tasks.

Department Safety Coordinator or Other Responsible Person must:

- Inspect ladders in their control/ownership
- Red tag and dispose damaged, deteriorated, and unusable ladders
- Assign training to all department ladder users
- Assure ladder are appropriate for work tasks.
- Provide alternative means of access when a worker determines ladder use is unsafe to complete task.

Environmental Health and Safety

The Environmental Health and Safety Program Administrator:

- Assures program is compliant with current safety codes and regulations.
- Communicates program changes and updates.
- Specifies training requirements.
- Verifies and approves training vendors or courses
- Provides technical guidance for high risk and infrequently performed tasks as requested
- Performs annual program audits

Program Technical Information

Selection/Procurement of Ladders

The Duty Rating is defined as the maximum safe load capacity of the ladder. A person's fully clothed weight plus the weight of any tools and materials that are carried onto the ladder must be less than the duty rating.

- Type III – Should be avoided as the duty rating is too light and likely to fail.
- Type II – Appropriate for elevated work projects where the user is not handling large or heavy objects during ladder use.
- Type I, IA, IAA – Strong ladders appropriate for maintenance and trade activities.

Duty Ratings

The American National Standard Institute (ANSI) has established the “Duty Rating” followed by Cal/OSHA. This rating identifies which portable ladder is intended for the conditions under which the ladder can be safely used. The Duty Rating system is summarized below.

Ladder Design and Selection for Use

Description: This area can be used to provide any technical info. For example, in the respiratory protection program, I used this section to talk about the different types of respirators, including a description, advantages, limitations, applications, protection factors, and typical uses.

Ladder Types/Descriptions

Ladder Duty Rating or "Type"	Capable of Supporting	Rated Use
TYPE IAA	375 lbs.	Special Duty
TYPE IA	300 lbs.	Extra Heavy Duty Industrial
TYPE I	250 lbs.	Heavy Duty Industrial
TYPE II	225 lbs.	Medium Duty Commercial
TYPE III	200 lbs.	Light Duty Household

Each of the following types of ladders are available in any Ladder Duty Rating:

Articulating, Combination, Multi Position, or Sectional Ladder

An articulating ladder is a non-self-supporting or self-supporting portable ladder, adjustable or non-adjustable in length. It consists of two or more sections of ladder that may be combined to function as a single ladder. The overall length of the assembled sections is designated by its size. They can be used to access areas above uneven surfaces.

Extension Ladder

An extension ladder is a non-self-supporting portable ladder, adjustable in length. It consists of two or more sections that travel in guides or brackets, which are arranged to permit length adjustment. An extension ladder's size is designated by the sum of the lengths of the sections measured along the side rails. It cannot exceed 44 feet.
They can be used to access varying heights.

Extension Trestle Ladder

A stepladder that is a self-supporting portable ladder with an extension. They are available in "twin front" or "double front" design so they can be climbed from both sides.
They can be used for operations in theater and stage work or to get to equipment above drop ceilings.

Fixed Ladder

A fixed ladder is a ladder permanently attached to a structure, building, or equipment.
The type of ladder shown is used to access the top of facilities for maintenance.

Individual Rung Fixed Ladders

A type of fixed ladder that does not have side rails. Each rung is permanently attached to the surface of a wall, machine, or piece of equipment.

These ladders are used to access and egress facilities like manholes and crawl spaces.

Platform Step Ladder, Single entry work platform

A step ladder with a small horizontal platform at the top.
These can be used to work safely at elevated locations using both hands.

Single Ladder

A single ladder is a non-self-supporting portable ladder, similar to an extension ladder, non- adjustable in length, which consists of only one section. Its size is designated by the overall length of the side rail and cannot exceed 30 feet.These can be used to access heights within the limit of their height.

Specialty Ladders

Any type of ladder that is constructed for specific use on unique devices used for research or any other purpose
Example uses of this Ladder include: The ladder shown is a shelf ladder that is attached to or used to access shelves. Another type of 'specialty ladder' is a rolling "Library Ladder" set on rails attached to shelving, etc.

Step Ladder

A step ladder (also known as an "A" frame ladder) is a self-supporting portable ladder, non-adjustable in length, having flat steps and a hinged back. It is measured along the front edge of the side rails. They are available in "twin front" or "double front" design so they can be climbed from both sides. These can be used to access heights within the limit of their height.

Step-to-Straight Ladder

Ladder can convert quickly from a stepladder to a push-up extension ladder. They are equipped with rung lock, utility-style safety shoes, and a standard pole grip.
They can be used as either a self-supporting or non-self-supporting ladder.

Tripod Industrial Ladder

Tripod Step Ladders are designed to be used in construction and maintenance activities where a 4-leg step ladder would have limited access or require the ladder user to work off to one-side of the ladder. These should be purchased/used for maintenance and construction work where a single pole leg can be placed amongst equipment or other obstructions and allow safe-work access for the ladder user to face the work area not having to work off to one side.

Tripod Orchard Ladder

Tripod orchard ladders are designed to be used on soft and uneven terrain therefore they lack spreaders, locking devices, steel points, and safety shoes.
These should only be purchased and/or used for outdoor work in pruning and accessing tree canopies.

Ladder Accessories and Their Uses

Cable hook and V-ring assembly

Used to secure the top of a single ladder or extension ladder to a pole, pipe or other 'rounded' vertical support structure.

Cage (Fixed Ladder Cage)

Ladder cages provide fall protection and are required by code on fixed ladders over 20 feet high. The base of the cage must be 7' above the base surface.

Caster Brackets

Weight sensitive brackets with casters that allow a ladder to be rolled on a floor when there is no load on the ladder.

Cinch (Ladder Cinch or Ladder Tie)

Used as a quick tie down for use on poles or similar structures.

Jacks (Ladder Jack)

Attaches to rungs of non-self-supporting ladders to allow the use of ladders as supports for scaffold planks. Fall protection is required.

Ladder Jacks and Guardrail Systems

Here is a video that describes one manufacturer's setup and use of guardrails and tool hangers for use with ladder jacks, ladder planks and working on roofs.

Levelers (Ladder leveler)

Two base attachments are used to level the ladder on a sloped support surface.

Pail Shelf

A pail shelf attaches to an existing shelf to provide relatively stable locations for tools and pails or buckets.

Paint can hangers (for extension ladders)

Are designed to be easily attached and removed from a ladder in order to hang a bucket. There are load limits, as determined by the manufacturer, for both the ladder rail and the hanger. They can be used to temporarily hang other supplies or tools as long as they are within the load limits of the ladder and hanging bracket.

Platform (Ladder Platform)

Kicks out of the way easily for climbing and is used as a platform to stand on.

Stabilizer

Attaches to the ladder rungs or rails to stand the ladder off from a surface or stabilize the ladder around an obstruction such as a pipe, a gutter or a window.

Tray – Multipurpose Use

Made for straight or stepladders. The texture is intended to provide a place to put small parts such as bolts, nuts, wire-nuts and small tools in addition to pails.

Tool Belt

Worn by ladder users to hold tools and project materials securely attached to their waist so that they may ascend and descend ladders using both hands.

Tool Lasso

Secures awkward tools to a belt to allow safe ladder climbing with needed tools.

Program Requirements and Procedures

Ladder User's Safe-Work Practices

Select a ladder that is the proper length and duty rating for the intended work.

NOTE: A leaning-ladder must extend at least 36" above the edge of a roof/mezzanine when properly installed. A step ladder must be tall enough so that you don't have to stand on the top or top two rungs of the ladder to access your work.

- Do not use electrically conductive (e.g. aluminum) ladders for electrical work or near live electrical parts.
- Inspect the ladder for broken or defective parts prior to each use. This inspection may be documented to satisfy the Cal/OSHA requirement for frequent inspections by using Attachment 3
- Remove damaged or defective ladders from use and notify department management of the problem ladder.
- Do not place ladders where they can be accidentally struck or displaced.
- If the ladder is used in an area where anyone could walk under it, the area must be cordoned off with a visual barrier such as yellow caution tape to alert pedestrians to the hazard of something falling from the ladder.
- Ladders must not be placed in passageways, doorways, driveways, or any location where they may be displaced by activities being conducted on any other work, unless protected by barricades or guards.
- For leaning or extension ladders, tie, block, or otherwise secure while in use.
- Do not splice ladders together.
- Always face the ladder while ascending and descending.
- Do not stand on the top three rungs of a single ladder or an extension ladder unless there are members of the structure that provide a firm handhold or personal fall protection is used.
- Do not stand on the top cap and top two steps of a step ladder.
- If working outside of the ladder's footprint, or when standing on the upper-most parts of the ladder as noted above, use an appropriate fall protection system as described in the EH&S Fall Protection Equipment and Inspection Fact Sheet. Do not place planks for walking on the top cap or any other part of a ladder.
- Do not use the X-bracing or other structures on the rear section of a stepladder for climbing unless the ladder is designed to be climbed from both sides. See Extension Trestle Ladders and similar.
- Make sure that a stepladder is properly set up and that the spreader is locked in place before use.
- Do not use the stepladder as a lean-to ladder.
- Always use a tool belt and other 'hands-free' carrying devices when ascending and descending a ladder.
- When working aloft, secure tools and supplies so they cannot fall from the ladder.

Fall Protection – When must it be used?

Ladders may be used WITHOUT the user wearing personal fall protection when a leaning or extension ladder can be tied-off and stabilized to a permanent structure, or a step ladder is used on a level firm surface. Fall protection **MUST BE USED** in all other ladder-use situations unless the supervisor can demonstrate that the planned work activities are equivalently safe. If personal fall protection is used it must be attached to an anchor point that has been inspected by a competent person or by a certified Scaffolding Inspection, or using a temporary anchor device such as an elbow strap. Alternatives to using fall protection include temporary scaffolding with appropriate railings, the use of an mobile elevated work platform (MEWP), and should be considered before using ladders in such situations.

If alternatives are unavailable or not feasible, the employee must use fall protection devices as described in the EH&S Fall Protection Program.

Housekeeping

- Clear debris and equipment that could cause a slip, trip, or fall from working areas around the ladder.
- Prevent equipment and supplies from falling on other people.
- Set up ground cloths if needed.
- Cordon off work areas using yellow caution tape to keep casual passersby out of the work area.

Program Training

Department Requirements

The Department owning the ladders has the option of providing ladder user training from:

- Online training,
- Instructor Led Training, or
- Providing training from within the department.

Irrespective of the source, the contents of and safe-work procedures outlined in this program are part of any ladder safety training. Training is documented and kept in a readily accessible location by the department designee for access reference as needed by Department management, EH&S, or regulatory agency (e.g. Cal/OSHA).

Ladder Users

As part of their work activities, ladder users receive documented training once on the contents of this program and the general safe-work procedures it contains. In addition, site-specific or task- specific safe-work orientation/tail-gate may be needed in the use of ladders for unusual operations. Annual review of the general requirements and safe-work rules of this program is appropriate for tailgate or periodically scheduled safety meetings.

Definitions

"A" Frame ladder — A self-supporting portable ladder, non adjustable in length, with flat steps and hinged base. Also known as a Step ladder.

Articulating ladder — Also known as a “Combination ladder”, “Sectional ladder” or

"Multi-position ladder”, this is a portable ladder capable of being used either as a stepladder, a single ladder or an extension ladder. It may also be capable of being used as a trestle ladder or a stairwell ladder.

Cage — A cage is a guard that may be referred to as a cage or basket guard, which is 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.

Cleats — Ladder cross pieces of rectangular cross section placed on edge upon which a person may step while ascending or descending. Also known as ladder “rungs”.

Combination ladder — Another name for “Articulating Ladder”. See definition above.

Double Front or Twin Front ladder — A self-standing ladder that is designed to allow both sides of the ladder to be climbed safely.

Feet — The component of a ladder support that is in contact with the lower supporting surface.

Fixed ladder — A ladder that is permanently attached to a structure, building, or equipment.

Grab Bars — Grab bars are individual handholds placed adjacent to or as an extension above ladders for the purpose of providing a safe hand-hold above the ‘top’ of the ladder

Individual-Rung Ladder — A fixed ladder, each rung of which is individually attached to a structure, building, or equipment.

Ladder Stand — A mobile fixed size self-supporting ladder consisting of a wide flat tread ladder in the form of stairs. The assembly may include handrails but does not include a platform.

Multi-position ladder — Another name for “Articulating Ladder”. See definition above.

Rungs — Ladder crosspieces upon which a person may step while ascending or descending. Rungs are usually ‘round’ in cross-section, while “cleats” usually are rectangular in cross-section. See definition of “Cleats” above.

Sectional ladder — Another name for “Articulating Ladder”. See definition above.

Sections — as related to a “Sectional ladder”

Bottom or base section: the lowest section of a non-self-supporting portable ladder.
Top or fly section: the uppermost section of a non-self-supporting portable ladder.
Middle or intermediate section: the section between the top (fly) and bottom (base) sections of a non-self-supporting portable ladder.

Single ladder — A non-self-supporting portable ladder, non adjustable in length, consisting of one section.

Side rails — The side members joined at intervals by rungs, steps, cleats, or rear braces.

Step stool (ladder type) — A self-supporting, foldable, portable ladder, non-adjustable in length, 32 inches or less in 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.

Step ladder — Also known as an “A” Frame ladder. See definition above.

Top Cap — The uppermost horizontal member of a portable step ladder or step stool.

Record Keeping Requirements

Annual inspections — Keep inspection reports for the past three years. May be included as part of the Annual Shop Inspection process.

User Training Records – Records are retained in the Learning Management System.

Frequent Inspections — Cal/OSHA requires "Frequent Inspections". Their definition of frequent is "more than twelve times per year." Retain records for one year.

References

Cal/OSHA

Stairways and Ladders https://www.dir.ca.gov/title8/1629.html
Ladder, General https://www.dir.ca.gov/title8/1675.html
Use of Ladders https://www.dir.ca.gov/title8/3276.html
Fixed Ladders https://www.dir.ca.gov/title8/3276.html
Use of Fixed Ladders https://www.dir.ca.gov/title8/3276.html
Window Cleaning https://www.dir.ca.gov/title8/3287.html

ATSM Standard

Standard Specifications for Ladders, Fixed, Vertical, Steel, Ship's - link

Program History

Issued by: Melonee Cruse

Next review date: YYYY

Revision	Approval Date	Summary of change
1.0	MM/YYYY	
2.0	MM/YY	

Attachments

Attachment 1 Ladder Inventory

Department: _____ Inventory Date: _____

Shop: _____ Shop Inventoried By: _____

Ladder Inventory by Duty Rating, Type and Length

Duty Rating	Physical Type	Length in Feet	Quantity

Accessory Type (Describe)	Quantity

Attachment 2 Ladder Inspection Checklist

Department: _____ Date: _____

Shop: _____ Inspected By: _____

If any of the answers are NO, remove the ladder from service and tag or mark it as "out of service" until it is repaired or destroyed.

List Ladder(s) by their Identification Number	Did the ladder pass inspection when compared to the inspection criteria below?	If not, what is ladder status? o Tagged out for repair o Removed and destroyed
	☐ YES ☐ NO	☐ TAGGED ☐ DESTROYED
	☐ YES ☐ NO	☐ TAGGED ☐ DESTROYED
	☐ YES ☐ NO	☐ TAGGED ☐ DESTROYED
	☐ YES ☐ NO	☐ TAGGED ☐ DESTROYED
	☐ YES ☐ NO	☐ TAGGED ☐ DESTROYED
	☐ YES ☐ NO	☐ TAGGED ☐ DESTROYED

- Feet are intact and grip solidly
- Steps / Rungs are clean and free of dust, oil or other surface contaminants.
- Steps/Rungs are secure to rails
- Ladder has unique Cal Poly Identification Number
- Hinges are secure
- Ladder is not made of wood
- Locking mechanisms are intact
- Rails are not cracked or separated from feet, hinges or rungs
- For Articulated and Step ladders, the two front legs are the same length and the two rear legs are the same length

- Labels are intact and readable
- Ladder is not painted
- Extension Ladder: Locks are in operable condition
- Extension Ladder: Pulleys are secure and operable
- Extension Ladder: Rope secured to attachment points and in good condition
- Extension Ladder: The sliding section(s) should overlap each other by at least:
  - 3 feet on ladders up to 32 feet long.
  - 4 feet on ladders 32 – 36 feet long.
  - 5 feet on ladders 36 - 48 feet long.
  - 6 feet on ladders longer than 48 feet
- Accessories (leg levelers, paint shelves, stand-off shelves) are in good condition

Attachment 3 Safe Ladder Work Practices

LADDER SAFE WORK PRACTICES

Safe work practice when using a ladder:

- **Read and Follow Labels**: Follow all labels and markings on the ladder.
- **Avoid Electrical Hazards**: Check for overhead power lines and avoid using metal ladders near electrical equipment.
- **Inspect Ladder Before Use**: Remove any damaged ladders from service, tag them, and repair or discard as needed.
- **Maintain 3-Point Contact**: Always have two hands and a foot or two feet and a hand on the ladder when climbing.
- **Stay Centered and Face Ladder**: Keep your body centered and always face the ladder while climbing.
- **Use Proper Accessories**: Only use ladders and accessories for their intended purposes.
- **Keep Ladder Clean**: Ensure rungs, steps, and feet are free of slippery materials.
- **Avoid Misuse of Step Ladder**: Do not use a step ladder as a single ladder or partially closed.
- **Do Not Use Top Rung**: Unless designed for that purpose, avoid using the top rung as a step.
- **Place on Stable Surface**: Use ladders only on stable, level surfaces unless secured to prevent displacement.
- **Avoid Improvised Height**: Do not place ladders on boxes, barrels, or unstable items to gain height.
- **Do Not Move Ladder While Occupied**: Never shift or move a ladder with a person or equipment on it.
- **Ensure Proper Ladder Height**: Extension ladders should extend at least 3 feet above the elevated surface.
- **Set Proper Angle**: Position ladder base one-quarter of its working length from the support wall.
- **Secure in High-Traffic Areas**: Secure ladders in high-traffic areas or use a barricade to prevent displacement.
- **Check Extension Locks**: Ensure all locks are properly engaged on an extension ladder.
- **Observe Load Rating**: Do not exceed the maximum load rating, including tools and equipment weight.

These practices enhance safety and help prevent ladder-related accidents.

Attachment 4: Additional Resources (links)

Cal/OSHA - Portable Ladder Safety

Cal/OSHA - Protect Yourself when using portable ladders in construction Video WorkSafeBC - Construction Safety Series - Ladder Safety

WorkSafeBC - Ladder Safety Video

WorkSafeBC - Falls from Elevation Video Series - You're A Pro: Falls from Ladders