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Standards

PRC-STD-SH-40314

Portable and Fixed Ladder Standard

Revision 0, Change 3

Published: 05/07/2014

Effective: 05/07/2014

Program: Occupational Safety and Industrial Hygiene

Topic: Occupational Safety and Industrial Health

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Functional Manager: Roueche, Kimberly

Use Type: Administrative



JHA: Administrative**Periodic Review Due Date: 06/27/2015**

Rev. 0, Chg. 3

USQ Screen Number:

- 100 K Facility : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.
- Canister Storage Building/Interim Storage Area : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.
- Central Plateau Surveillance and Maintenance : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.
- Less Than HazCat 3 : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.
- Plutonium Finishing Plant : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.
- Solid Waste Operations Complex : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.
- Transportation : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.
- Waste Encapsulation Storage Facility : Excluded from USQ
Exclusion Reason:
Exempt from USQ Process per PRC-PRO-NS-062, Table B-1.

CHANGE SUMMARY**Description of Change**

Added (applies to both portable and fixed ladders) to 3 bulleted items in Appendix A. This was added for clarification.

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1.0 INTRODUCTION**1.1 Purpose**

This standard defines the program requirements for purchasing, selection for field use of portable ladders and use of fixed ladders.

1.2 Scope

The requirements presented in this standard are applicable to usage of portable and fixed ladders within CH2M HILL Plateau Remediation Company (CHPRC) controlled locations.

This standard does not apply to mobile ladder stands/platforms (may be referred to as a “rolling” ladder/platform, managed in accordance with PRC-PRO-SH-10321, *Walking/Working Surfaces*), stage platforms, and step stools (less than or equal to 32” in length).

1.3 Applicability

This standard is applicable to CHPRC and subcontractor personnel involved with the selection and use of ladders.

1.4 Implementation

This procedure is effective upon publication.

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Effective Date: 05/07/2014

2.0 STANDARD**2.1 Portable Ladders**

A portable ladder may be either self-supporting or non-self-supporting, and can readily be moved or carried, usually consisting of side rails joined at intervals by step, rungs, cleats, or rear braces. This document primarily addresses the most common types/styles used in our industry to include straight, step, extension, and single ladders. For the selection, inspection, and use criteria for other, less common types of ladders (such as trestle, sectional, tripod, and special purpose (articulated or combination), consult with a manufacturer representative and/or product safety literature.

Fall protection requirements, and the use of the Fall Protection Work Permit (FPWP), are described in DOE-0346, *Hanford Site Fall Protection Program (HSFPP)*.

2.1.1 Buying Portable Ladders

- Manufactured ladders purchased for use shall meet the applicable requirements of American National Standards Institute (ANSI) A14 series, and bear a label to validate such conformance.
- Ladders shall have steps/rungs that are slip resistant, fixed to prevent turning, and uniformly spaced.
- Ladders shall be equipped with non-slip bases (feet) to prevent slipping.

NOTE: *The construction of job-made ladders is discouraged, and should be undertaken only to support a special application that cannot be filled by use of a manufactured ladder*

- Job-made ladders shall be constructed to conform to the design specifications of ANSI A14.4, *Job-Made Ladders*.

2.1.2 Storing and Transporting Portable Ladders

NOTE: *Refer to manufacturer technical guidelines for recommended storage practices.*

- Ladders shall be transported and stored in a manner that provides for stability, prevents damage, and permits safe access.

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2.1.3 Selecting Portable Ladders

- NOTE:**
- *As used herein, a Competent Person is one who by way of training, skill, and practical experience is capable of identifying existing and predictable hazards relating to portable ladders in the work environment and has authorization to take prompt corrective measures to eliminate such hazards. The Competent Person process is described in PRC-PRO-TQ-40164, Personnel Training Qualification.*
 - *Approvals for portable ladder is documented in the hazard analysis document*

1. Pre-approval is required for the use of a portable ladder to perform any elevated work.
 - Evaluate the work for use of aerial lifts, powered work platforms or lifts, mobile ladder stands/mobile ladder stand platforms, construction of scaffolding, etc. instead of a portable ladder.
 - The first line supervisor, manager, or field work supervisor shall provide concurrence for ladder use, consulting with the occupational safety representative (as needed).
2. Implement the following controls when a ladder is the only device that can reasonably be used to perform the task:
 - The proper ladder for the task shall be identified, inspected, and verified as safe for use. Determine the proper controls for its use,
 - The first line supervisor, manager, or field work supervisor must assign a second employee to the task with the responsibility for holding the ladder and acting as a spotter for the worker on the ladder.

NOTE: *The duty rating, which is not to be exceeded, reflects the combined weight of the individual plus any tools/material to be handled. Ladders designed for work from either side or for two workers will have a duty rating for each side.*

3. A ladder of sufficient duty rating (e.g., safe working load capacity) shall be selected for the task(s) to be performed from one of the following three classifications:
 - Special Duty (Type IAA) = 375 lb. capacity
 - Extra Heavy Duty (Type IA) = 300 lb. capacity
 - Heavy Duty (Type I) = 250 lb. capacity

NOTE: *To reduce or eliminate the potential for instability, users should select a ladder that allows work to be accomplished from the mid-section of the ladder rather than the top.*

4. When a ladder is selected for use, it shall be of proper size (length), style (self-supporting or non-self-supporting), and composition (with preference to fiberglass construction) to provide the safest application for the scope of work to be performed.
5. Portable ladders, with non-conductive side rails, shall be used for work where potential contact with energized parts exists.
6. Unless designed for such application, ladders shall not be tied or fastened together to increase their length.

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2.1.4 Pre-Use Inspection

- The ladder User shall ensure the sticker indicating Competent Person Ladder Inspection is present and performed in the past twelve months, and verify the safe condition of a ladder before each use by ensuring that all bolts, rivets, and fasteners are tight; side rails and rungs are free of slippery substances and not bent or damaged; the ladder operates correctly and with stability; and the overall condition is satisfactory.
- Ladders found to be defective or otherwise in substandard condition shall be immediately removed from service for repair (tagged-out, if needed), or destroyed.

2.1.5 Using Portable Ladders

- NOTE:**
- *Where it is determined that work will be performed from a ladder where the user is exposed to a fall hazard, the hazard shall be analyzed and documented in a FPWP (refer to Site Form A-6004-286). The FPWP shall be approved before the task begins, and accessible during job performance. Portable ladders used for access to elevations over 24 feet shall require fall protection.*
 - *The FPWP is not required when using the ladder for access (ascending and descending), unless it is over 24 ft.*
- Obtain an approved FPWP, as required, when work will be performed from a ladder.
 - The ladder shall be used only after it has been determined by pre-use inspection to be in good condition, and current within its annual inspection schedule.
 - Follow information on ANSI Prescribed ladder label (Figure1).

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Figure 1. Example ANSI prescribed ladder labels

SAFETY FIRST

STEPLADDER — FOR YOUR SAFETY READ CAREFULLY

PROPER SELECTION

- Select ladder of proper height to reach working height.
- IMPORTANT:** Ladders are designed to support one person plus materials and tools not more than the working load on the notice sign on this ladder.
- Select ladders within the following:

TYPE	DUTY RATING	WORKING LOAD
AAA	SPECIAL DUTY	375 lbs.
IA	INDUSTRIAL - EXTRA HEAVY	300 lbs.
I	INDUSTRIAL - HEAVY	250 lbs.
II	COMMERCIAL - MEDIUM	225 lbs.
III	HOUSEHOLD - LIGHT	200 lbs.

INSPECTION

- Inspect upon receipt and before each use; never climb a damaged, bent or broken ladder. All parts must be in good working order.
- Make sure all rivets, joints, nuts, and bolts are tight; steps, spreaders, and braces secure; spreaders and pail shelf function properly.
- Keep ladder clean, free from grease, oil, mud, snow and wet paint, and other slippery material. Keep your shoes clean; leather soles should not be used.
- Never make temporary repairs of damaged or missing parts.
- Remove ladder if broken, worn or if exposed to fire or chemical corrosion.

PROPER SET-UP

- DANGER! METAL CONDUCTS ELECTRICITY!** Do not let ladders of any material come in contact with live electrical wires.
- Make sure ladder is fully open, spreaders are secure, pail shelf in position.
- Place on firm level surface with a secure footing. Do not use on slippery surfaces. Do not place on boxes, unstable bases or scaffolds to gain additional height. Do not place in front of door opening toward ladder.

PROPER CLIMBING AND USE

- DO NOT USE LADDERS** if you are dizzy, or are subject to fainting spells, or are using medicine or alcohol, or are physically impaired.
- To protect children, do not leave ladder set up and unattended.
- Face ladder when climbing up or down; keep body centered between side rails.
- Maintain a firm grip. Use both hands in climbing.
- Never climb ladder from the side unless ladder is secured against side-to-side motion.
- Do not overreach; move ladder when needed.
- Do not "walk" or "jog" ladder when standing on it.
- Do not stand, climb or sit on braces, spreaders, pail shelf, back section, or above second step from top of ladder.
- Do not overload. Ladders are meant for one person. Do not use as brace, platform or plank.
- Keep ladder close to work; avoid pushing or pulling off to the side of ladders.

PROPER CARE AND STORAGE

- Store ladder in safe and dry place.
- Properly secure and support ladder while in transit.
- Never store materials on ladder.
- Keep ladder clean and free of all foreign materials.

CAUTION

SET UP LADDER PROPERLY TO REDUCE SLIP AND OVERLOAD HAZARDS. FOLLOW THESE INSTRUCTIONS

① PLACE TOES AGAINST BOTTOM OF LADDER SIDE RAILS.
② STAND ERECT
③ EXTEND ARMS STRAIGHT OUT
④ PALMS OF HANDS SHOULD TOUCH TOP OF RUNG AT SHOULDER LEVEL

1. DO NOT OVER-REACH. KEEP BODY CENTERED BETWEEN SIDE RAILS
2. EXTEND LADDER ONE TO THREE FEET ABOVE ROOF FOR ACCESS

- Appendix A summarizes key instruction for ladder users.

2.1.6 Accessories for Portable Ladders

Ladder accessories (e.g., stabilizers, surface protectors, extensions, levelers) shall be installed in accordance with manufacturer instructions, and be compatible with the make and model of the ladder to which the accessory is to be attached.

2.1.7 Portable Ladder User Training

- Employees who use ladders in the course of their work assignments, or perform annual ladder inspections, shall complete initial training through Computer-Based Training Course No. 044391, *Portable Ladder Safety*.
- Employees who use ladders in the course of their work assignments shall be retrained if it is determined that their hazard recognition skill level relating to proper selection, use, care, or handling practices is diminishing.

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

2.2.1 Fixed Ladder Design

1. Ladders shall be capable of supporting, without failure, at least two loads of 250 pounds (114 kg) each, concentrated between any two consecutive attachments (the number and position of additional concentrated loads of 250 pounds (114 kg) each, determined from anticipated usage of the ladder, shall also be included), plus anticipated loads caused by ice buildup, winds, rigging, and impact loads resulting from the use of ladder safety devices. Each step or rung shall be capable of supporting a single concentrated load of at least 250 pounds (114 kg) applied in the middle of the step or rung.
2. All rungs shall have a minimum diameter of three-fourths inch for metal ladders.
3. Ladder rungs, cleats, and steps shall be parallel, level, and uniformly spaced when the ladder is in position for use. The distance between rungs, cleats, and steps shall not exceed 12 inches and shall be uniform throughout the length of the ladder.
4. The minimum clear length of rungs or cleats shall be 16 inches.
5. Rungs, cleats, and steps shall be free of splinters, sharp edges, burrs, or projections which may be a hazard.
6. The rungs of an individual-rung ladder shall be so designed that the foot cannot slide off the end.
7. Side rails which might be used as a climbing aid shall be of such cross sections as to afford adequate gripping surface without sharp edges, splinters, or burrs.
8. All splices made by whatever means shall meet design requirements as noted in 29 CFR 1910.27. All splices and connections shall have smooth transition with original members and with no sharp or extensive projections.
9. Ladders without cages or wells shall have a clear width of at least 15 inches provided each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.
10. The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars shall be not less than 4 inches. Grab bars shall not protrude on the climbing side beyond the rungs of the ladder which they serve.
11. Cages or wells shall be provided on ladders of more than 20 feet to a maximum unbroken length of 30 feet. Cages shall extend a minimum of 42 inches above the top of landing, unless other acceptable protection is provided.
12. Where an individual 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 1/2 inches.

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13. When ladders are used to ascend to heights exceeding 20 feet, 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.
14. All landing platforms shall be equipped with standard railings and toe boards, so arranged as to give safe access to the ladder. Platforms shall not be less than 24 inches in width and 30 inches in length.
15. The side rails of through or side-step ladder extensions shall extend 3 1/2 feet above parapets and landings. For through ladder extensions, the rungs shall be omitted from the extension and shall have not less than 18 or more than 24 inches clearance between rails. 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 3 1/2 feet minimum.
16. Grab bars shall be spaced by a continuation of the rung spacing when they are located in the horizontal position. Vertical grab bars shall have the same spacing as the ladder side rails. Grab-bar diameters shall be the equivalent of the round-rung diameters.
17. All ladders shall be maintained in a safe condition. All ladders shall be inspected regularly, with the intervals between inspections being determined by use and exposure.

2.2.2 Use of fixed ladders

- Employees shall be physically and mentally able to use ladders or perform ladder tasks without undue risk to their own or to others' safety.
- The ladder shall be used only after it has been verified that it is current in its periodic inspection.
- If working from a ladder where the user is exposed to a fall hazard, the hazard shall be analyzed and documented in the FPWP.
- Fixed ladders used for access to elevations over 24 feet shall require fall protection.
- Appendix A summarizes key instruction for ladder users.

3.0 FORMS*Fall Protection Work Permit (A-6004-286)*

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4.0 RECORD IDENTIFICATION

All records are required to be managed in accordance with PRC-PRO-IRM-10588, *Records Management Processes*. OCRWM records are also managed in accordance with PRC-PRO-QA-19579, *OCRWM Records Management*.

Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility	OCRWM Retention Schedule (If OCRWM Related)
<i>Fall Protection Work Permit (A-6004-286)</i>	Field Work Supervisor	Work Control/ Work Package/ Buyer Technical Representative	N/A

5.0 SOURCES**5.1 Requirements**

10 CFR 851, *Worker Safety and Health Program*
 29 CFR 1910, *Occupational Safety and Health Standards*
 29 CFR 1926, *Safety and Health Regulations for Construction*
 CRD O 433.1B, *Maintenance Management Program for DOE Nuclear Facilities*
 DOE-0346, *Hanford Site Fall Protection Program (HSFPP)*

5.2 References

PRC-PRO-SH-10321, *Walking/Working Surfaces*
 PRC-PRO-IRM-10588, *Records Management Processes*
 PRC-PRO-QA-19579, *OCRWM Records Management*
 PRC-PRO-TQ-40164, *Personnel Training Qualification*

6.0 APPENDIXES

Appendix A - Ladder Usage

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Published Date: 05/07/2014

Effective Date: 05/07/2014

Appendix A - Ladder Usage

Employees are required and responsible to observe the following safety precautions while using ladders:

- Do use ladders in accordance with manufacturer-instructions.
- Do use portable ladders only for the purpose for which they are designed.
- Do use portable ladders within their established load carrying capacity classification, taking into consideration the stress which may be exerted while performing the task.
- Do use conventional fall protection methods (e.g., fall arrest, fall restraint) when working from a portable ladder where a fall hazard exists.
- Do ascend and descend ladders while maintaining 3-point contact of hands and feet at all times. (applies to both portable and fixed ladders)
- Do use a portable ladder of sufficient length to avoid having to stand on the top two steps of a stepladder or top four rungs of a non-self-supporting ladder.
- Ensure support legs of ladders are positioned on firm, level, and slip resistant surfaces, with the area around the base and top (where applicable) landing maintained clear of tools, material, and debris.
- Do not shift, reposition, or extend portable ladders when the ladder is occupied.
- Do avoid over-reaching beyond the side rails or exerting excess weight/force on the portable ladder steps/rungs.
- Do place the supporting legs of portable ladders on a substantial and level base and ensure the base section has secure footing.
- Do set up portable ladders away from unlocked or unguarded doors that may open toward the ladder, and away from moving vehicles/equipment.
- Ladders placed in any location where they can be displaced by workplace activities or traffic, such as in passageways, doorways, or driveways, shall be secured to prevent accidental displacement, or a barricade shall be used to keep the activities or traffic away from the ladder.
- Do maintain the base and top landing (as applicable) around all portable ladders in a clear and unobstructed manner. (applies to both portable and fixed ladders)
- Do use stepladders in the fully open position with the locking devices (braces) set, and using the steps provided.
- Do ensure that shoes, hands, gloves, and the portable ladder steps/rungs are free of oil, grease, mud, or other substances that may pose a slipping hazard.
- Do ensure rungs or steps are slip resistant by design, are coated with skid-resistant material, or treated to minimize slipping.
- Do face the portable ladder while ascending or descending, using both hands to grip the side rails.
- Do check that inspection stickers are less than 12 months old and legible. (applies to both portable and fixed ladders)
- When working from a ladder, ensure that both the top and bottom of the ladder are secure to prevent the ladder from slipping from side to side.

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- When portable ladders are used for access to an upper landing surface, the ladder side rails shall extend at least 3 feet (.9 m) above the upper landing surface to which the ladder is used to gain access. Do support both rails at the top, unless the ladder has a single support attachment.
- Do maintain stability and prevent overload by positioning only one person at a time on portable ladder steps/rungs.
- Do position single and extension portable ladders as follows:
 - With the weight equally distributed between the two side rails
 - At a pitch so that the horizontal distance from the top support to the foot of the ladder will be approximately one-fourth the vertical distance between these points
 - To prevent slipping or accidental displacement of the unit
 - Against structures or equipment determined to be stable and rigid enough to provide the necessary support.