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Standards

PRC-STD-SH-40314

Portable and Fixed Ladder Standard

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- Solid Waste Operations Complex :
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- Canister Storage Building/Interim Storage Area :
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- Central Plateau Surveillance and Maintenance :
Excluded from USQ
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- Waste Encapsulation Storage Facility :
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- 100 K Facility :
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- Plutonium Finishing Plant :
Excluded from USQ
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- Transportation :
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Change Summary

Description of Change

Moved requirements for Mobile Ladder Stands and Mobile Ladder Stand Platforms from PRC-PRO-SH-10321 (Walking/Working Surfaces) so PRC-PRO-SH-10321 can be cancelled
Clarified requirements and eliminated redundancies

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Ladders – Portable and Fixed**Published Date: 01/07/19****Effective Date: 01/07/19****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 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.

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, single ladders, and mobile ladder stands/platforms. 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, including 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.

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NOTE: *The construction of job-made ladders is discouraged, and should be undertaken only to support a special application that is unable to be met 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: *The manufacturer technical guidelines provides recommended storage practices.*

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

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

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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.

2.1.4 Pre-Use Inspection

- The ladder user shall ensure the sticker indicating that a Competent Person Ladder Inspection is present and the inspection had been performed in the past twelve months. The User shall 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; the label is legible; 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.*
 - *An 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
IIA	SPECIAL DUTY	3125 lbs.
IA	INDUSTRIAL-EXTRA HEAVY	200 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; spradders and pail shelf function properly.
- Keep ladder clean, free from grease, oil, mud, snow, 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.
- Destroy ladder if broken, worn or if exposed to fire or chemical corrosion.

PROPER SET-UP

- DANGER! METAL CONDUITS 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-wise 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. DO NOT OVER-REACH. KEEP BODY CENTERED BETWEEN SIDE RAILS

2. EXTEND LADDER ONE TO THREE FEET ABOVE ROOF FOR ACCESS

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

- 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 at least two loads of 250 pounds (114 kg) each. The number and position of additional concentrated loads of 250 pounds shall be determined from anticipated usage of the ladder, 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 that 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 behind 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. For fixed ladders that extend more than 24 feet:
 - Ladders installed before November 19, 2018, shall be equipped with a personal fall arrest system, ladder safety system, cage, or well.
 - Ladders installed on and after November 19, 2018, shall be equipped with a personal fall arrest system or a ladder safety system.

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12. Where cages or wells are provided on ladders, the cages shall extend a minimum of 42 inches above the top of landing, unless other acceptable protection is provided.
13. 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.
14. When ladders with cages are used to ascend to heights exceeding 50 feet, landing platforms shall be provided for each 50 feet of height. 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.
15. 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.
16. 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.
17. 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.
18. 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.

2.2.1 Mobile Ladder Stands/Platforms

1. Inspect the ladder upon receipt for damage incurred during shipping and prior to each period of use for any sustained damage, such as unusual wear, deterioration, or corrosion.
2. Units that are damaged or weakened shall not be used until repairs are completed. Units beyond repair shall be destroyed.
3. No one may be on the ladder when it is being moved.

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4. Ladders shall not be loaded beyond rated loads.
5. Materials and equipment shall not be stored on the steps or platform of a unit.
6. Additional height shall not be gained by the addition of any type of extension or an object being placed on the unit.
7. Foreign materials, such as mud or grease, shall be removed from employees' shoes prior to ascending a unit.
8. Use handrails while ascending or descending the unit.
9. Take proper safety measures when working near electrical lines.
10. Doors shall be secured in an open position, locked, attended, or barricaded prior to placing a ladder next to the doorway.
11. Always keep the unit in close proximity to the work.
12. Only use mobile ladder stands and ladder stand platforms on level surfaces. They shall not be used on uneven or sloping surfaces.
13. Understand the user requirements for mobile ladder stands and ladder stand platforms prior to use.
14. Access to or egress from any step or platform from any other elevated surface shall be prohibited unless the unit has been positively secured against movement.
15. Users shall only stand on steps or platforms.
16. Perform maintenance and inspection of mobile ladder stands and ladder stand platforms in accordance with the manufacturer's maintenance instructions and PRC-PRO-MN-40323, *Inspection - Portable and Fixed Ladders; Mobile Ladder Stands; Mobile Ladder Stand Platforms*.

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3.0 FORMS*Fall Protection Work Permit (A-6004-286)***4.0 RECORD IDENTIFICATION**

All records are generated, received, processed, and maintained by CHPRC in accordance with PRC-PRO-IRM-10588, *Records Management Processes*.

Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility
<i>Fall Protection Work Permit (A-6004-286)</i>	Field Work Supervisor	Buyer Technical Representative

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-IRM-10588, *Records Management Processes*
 PRC-PRO-MN-40323, *Inspection - Portable and Fixed Ladders; Mobile Ladder Stands; Mobile Ladder Stand Platforms*
 PRC-PRO-TQ-40164, *Personnel Training Qualification*

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Appendix A - Ladder Usage**Employees are required and responsible to observe the following safety precautions while using ladders:**

-
- USE ladders in accordance with manufacturer-instructions.
 - USE portable ladders within their established load carrying capacity classification.
 - ASCEND AND DESCEND while maintaining 3-point contact of hands and feet at all times (applies to both portable and fixed ladders).
 - 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.
 - POSITION the support legs of ladders on firm, level, and slip resistant surfaces
 - DESCEND from the ladder prior to shifting, repositioning, or extending a portable ladder.
 - AVOID over-reaching beyond the side rails or exerting excess weight/force on the portable ladder steps/rungs.
 - SECURE OR BARRICADE passageways, doorways, or driveways before placing a ladder in any location where they can be displaced by workplace activities or traffic.
 - MAINTAIN the base and top landing (as applicable) around all portable ladders in a clear and unobstructed manner.
 - USE stepladders in the fully open position with the locking devices (braces) set, and using the steps provided.
 - 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.
 - CHECK that inspection stickers are less than 12 months old and legible (applies to both portable and fixed ladders).
 - ENSURE that when portable ladders are used for access to an upper landing surface:
 - The ladder side rails extend at least 3 feet (.9 m) above the upper landing surface
 - Both rails are supported at the top, unless the ladder has a single support attachment.
 - MAINTAIN stability and prevent overload by positioning only one person at a time on portable ladder steps/rungs.
 - POSITION single and extension portable ladders:

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

Against structures or equipment determined to be stable and rigid enough to provide the necessary support to prevent slipping or accidental displacement of the unit.