HANFORD MISSION INTEGRATION SOLUTIONS

Requirements Documents

HMIS-RD-SP-24243

Portable and Fixed Ladders

Revision 0, Change 2

Published: 08/21/2024
Effective: 08/21/2024

Program: Safety Programs
Topic: Safety Programs

Subject Matter Expert: Mathews, Levi E
Functional Manager: Nielsen, Christopher E

Use Type: Reference

- No USQ Required

JHA: Administrative
Periodic Review Due Date:11/23/2025
Rev. 0, Chg. 2

Change Summary

Description of Change

Crane and Rigging created two new fixed ladder inspection forms and revised CRS-PRO-CAR-61345. To align with their forms and remain consistent with their procedure HMIS-RD-SP-24243 needs updated to reflect these changes.

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1.0 PURPOSE AND SCOPE

This Level 1 Requirements Document establishes the minimum requirements for purchasing, selection for use, inspection, and field use of portable ladders, and the design, inspection, and use of fixed ladders and mobile ladder stands. Additional material regarding portable ladder, fixed ladder, manhole steps, step bolt ladders, and mobile ladder stand ("rolling" ladders/platform) inspections is included in Appendix A of this document. This document does not cover fall hazards when working from ladders, which are addressed in *DOE-0346, Hanford Site Fall Protection Program (HSFPP)*.

The requirements in this document are based principally on 29 CFR 1910, *Occupational Safety and Health Standards Subpart D Walking Working Surfaces*, and 29 CFR 1926, *Safety and Health Regulations for Construction, Subpart X, Ladders,* and are applicable to Hanford Mission Integration Services (HMIS) employees and HMIS subcontractors as specified in their subcontract scope of work or approved safety plan.

This document partially implements the ISMS Core Functions #1, Define Scope of Work, #2, Identify and Analyze the Hazards, #3, Develop and Implement Hazard and Environmental Controls; and Guiding Principles #5, Identification of Safety and Environmental Standards and Requirements, #6, Hazard Controls Tailored to Work Being Performed.

The requirements herein do not apply to Hanford Fire Department ground and truck ladders (reference National Fire Protection Agency (NFPA) Standards 1914 and 1932), stage platforms, step stools (with a top step less than or equal to 32" in height), Hanford Patrol tactical operations or training for those operations, and attached scaffold access ladders. At a minimum these items must still be inspected prior to use and in accordance with manufacturer's recommendations. The requirements herein do not apply to ladders designed into or are an integral part of machines or equipment, or to fixed ladders in leased facilities and/or GSA facilities.

Implementation of these requirements are upon the effective date except as follows:

- Deadline by which all fixed ladders must be equipped with a ladder safety system or personal fall arrest system – November 18, 2036

2.0 REQUIREMENTS

A portable ladder may be either self-supporting or not 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. 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.

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

A manhole step is a step that is individually attached to, or set into, the wall of a manhole structure not to be considered a fixed ladder. A step bolt or pole step is a bolt or rung attached at intervals along a structural member used for foot placement and as a handhold when climbing or standing (typically constructed on the legs of towers)

2.1 Portable Ladders

2.1.1 Portable Ladder Purchase/Procurement

NOTE: *Under the requirement "type" column, "V" means verbatim and "I" means interpreted.*

#	Requirement	Type V or I	Source
1.	Manufactured ladders purchased for use shall meet the applicable requirements of American National Standards Institute (ANSI) A14, and bear a label to validate such approval.	I	29 CFR 1926.1053(a)(1)(i); 29 CFR 1926.1053 (a)(1)(ii); 29 CFR 1910.23(a)
2.	Only ladders with a duty rating of Type IAA, Type IA, or Type I shall be purchased for use at Hanford. NOTE 1: *ANSI Type IA ladders are recommended; however, a minimum rating of ANSI Type I is required. Ladders rated less than ANSI Type I are not used.* NOTE 2: *Special ANSI-rated ladders are necessary when access/use is required by personnel whose total weight (body weight, plus weight of tools/equipment being carried on the person) exceeds 300 pounds (113 kilograms). Type IA ladders are rated **up to** 300 pounds.*	I	10 CFR 851.10(a)(1)
3.	Ladders shall have steps/rungs that are slip resistant, parallel, fixed to prevent turning, and uniformly spaced.	I	29 CFR 1926.1053(a)(2); 29 CFR 1910.26(a)(5); 29 CFR 1910.23(b)(1); 29 CFR 1910.23(c)(1)
4.	Ladders shall have components with smooth surfaces to prevent punctures and lacerations and to prevent snagging clothing.	I	29 CFR 1926.1053(a)(11); 29 CFR 1910.23(b)(7)

#	Requirement	Type V or I	Source
5.	Have metal spreaders or locking devices on stepladders to hold the ladder in an open position during use.	I	29 CFR 1926.1053(a)(8); 29 CFR 1910.23(c)(2)
6.	Ladders shall be equipped with non-slip bases (feet) to prevent accidental displacement (slipping).	I	29 CFR 1926.1053(b)(7)
7.	Metal ladders are made with corrosion-resistant material or protected against corrosion.	V	29 CFR 1910.23(a)(6)
8.	No portable single rail ladders are used.	V	29 CFR 1910.23(c)(5)

2.1.2 Portable Ladder Competent Person Inspection

NOTE: *As used in this section, 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.*

#	Requirement	Type V or I	Source
1.	Competent Persons (defined in 29CFR1926.32[f]) shall be designated and assigned to perform and complete portable ladder inspections as follows, applying the inspection criteria located in Appendix A: • On an annual basis, • Before initial (first) use of a newly purchased ladder, and • After any occurrence which could affect safe usage.	I	29 CFR 1926.1053(b)(15); 29 CFR 1910.23(b)(9)
2.	Portable ladders found to be defective, with an expired annual inspection, or otherwise in substandard condition shall be immediately removed from service for repair (tagged-out per HMIS-PRO-23749, *Miscellaneous Facility Tags*, if needed), or destroyed. NOTE: *Only the most recent inspection sticker/tape shall remain on the ladder.*	I	29 CFR 1926.1053(b)(16); 29 CFR 1910.23(b)(10)

#	Requirement	Type V or I	Source
3.	Wooden ladders are not coated with any material that may obscure structural defects.	V	29 CFR 1910.23(a)(5)

2.1.3 Portable Ladder Storage and Transportation

#	Requirement	Type V or I	Source
1.	Ladders shall be transported and stored in a manner that provides for stability, prevents damage, and permits safe access. NOTE: *Refer to manufacturer technical guidelines for recommended storage practices.*	I	29 CFR 1910.25(d)(1); 29 CFR 1910.26(c)(1); 29 CFR 1910.26 (c)(2)

2.1.4 Portable Ladder Selection for Use

#	Requirement	Type V or I	Source
1.	The scope of work assignment and duration of task(s) to be performed shall be considered when determining the appropriateness of selecting a ladder as a suitable surface from which to perform elevated work. NOTE 1: *Work expected to require continuous ladder use on one step longer than 15 minutes or where work may involve pushing, pulling, sudden transfer of weight, dynamic body movement or leverage, operation of power tools that produce a high level of torque, or other motion that might generate a sideways force significant enough to destabilize the ladder, should consider use of scaffolding, elevated work platform, or aerial lift access as an alternative.* NOTE 2: *The use of a ladder limits access to the working zone to arm's length on either side of the ladder, and prevents use of dynamic body motions; extended periods of continuous use may hasten the onset of lower body fatigue. Consider using a scaffold or elevating work platform to provide a more substantial working surface and reduce the risk of a fall accident.*	I	10 CFR 851.10(a)(1); 29 CFR 1910.23(b)(8)

#	Requirement	Type V or I	Source
2.	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: *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. Each side of a two sided step ladder is rated individually or has a maximum weight per side.*	I	29 CFR 1926.1053(a)(1)(i); 29 CFR 1926.1053(a)(1)(ii); 29 CFR 1926.1053(b)(3); 29 CFR 1910.23(c)(3)
3.	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. NOTE: *Instability on portable ladders increases/occurs when the user extends too far over the rails or extends the torso above the top step. To reduce or eliminate stability situations, the users should select a ladder that allows work to be accomplished from the mid-section of the ladder rather than the top. Standing on the top-most approved step for use should be avoided if this creates a stability hazard. Use the longest appropriate ladder for that task.*	I	29 CFR 1926.1053(b)(13)
4.	Unless designed for such application, ladders shall not be tied or fastened together to increase their length.	I	29 CFR 1926.1053(a)(7); 29 CFR 1910.23(c)(3)

2.1.5 Portable Ladder Pre-Use Inspection

#	Requirement	Type V or I	Source
1.	A ladder User shall verify the safe condition of a ladder before 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. This	I	29 CFR 1926.1053(b)(15); 29 CFR 1910.23(b)(9)

#	Requirement	Type V or I	Source
	inspection shall be done before use each time the ladder is set-up.		
2.	Ladders found to be defective, with an expired annual inspection, or otherwise in substandard condition shall be immediately removed from service for repair (tagged-out, if needed), or destroyed.	I	29 CFR 1926.1053(b)(16); 29 CFR 1910.23(b)(10)

2.1.6 Portable Ladder Set-Up and Use

#	Requirement	Type V or I	Source
1.	When working from a portable ladder where a fall hazard exists, refer to and follow the requirements of DOE-0346, Hanford Site Fall Protection Program (HSFPP) before the task begins, including completion of a DOE-0346 required Fall Protection Work Permit (site form A-6004-286). NOTE 1: *A fall hazard exists when working from a portable ladder and the user does not follow manufacturer's direction by overreaching the ladder, not using the steps between the runners when ascending or descending the ladder, or creating a condition where the stability of the ladder's balance is compromised.* NOTE 2: *This requirement does not apply when the work is determined by the responsible person to be emergency in nature and immediately necessary to ensure worker safety or to protect the environment, site systems, services, or structures or to situations where an OSHA-compliant ladder less than 24 feet in height is used solely for access purposes (ascending and/or descending).*	I	29 CFR 1926.1051(b)
2.	The supporting legs of ladders shall be 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.	I	29 CFR 1926.1053(b)(6); 29 CFR 1926.1053(b)(9); 29 CFR 1910.23(c)(4); 29 CFR 1910.23(c)(9);

#	Requirement	Type V or I	Source
			29 CFR 1910.23(c)(13)
3.	Non self-supporting ladders shall be positioned to prevent accidental tipping or displacement during use, with lashing used to provide positive means of securing at the top, wherever feasible. NOTE 1: *It is recommended that the ladder be secured at both the top (both rails) and the bottom. A ladder may be "held in place" to prevent slippage at the base only when such action will achieve the stabilization needed.* NOTE 2: *Non-slip bases are not a substitute for care in safely placing, lashing, or holding a ladder on oily, metal, concrete, or slippery surfaces.*	I	29 CFR 1926.1053(b)(1); 29 CFR 1926.1053 (b)(7); 29 CFR 1910.23(c)(4)
4.	Non self-supporting ladders planned for use as an access to an upper landing surface shall be extended a minimum of 3 feet past the top support point, unless the ladder is lashed at the top and a stable grasping device (e.g., grab rail – to assist in mounting and dismounting) is provided.	I	29 CFR 1926.1053(b)(1); 29 CFR 1910.23(c)(11)
5.	The tops of non self-supporting ladders shall be placed so both rails are fully and equally supported on a solid surface. NOTE: *The support area should be at least 12 inches wide on both sides.*	I	29 CFR 1926.1053(b)(10); 29 CFR 1910.23(c)(10)
6.	The "4 to 1" rule shall be employed when setting up a non self-supporting ladder. NOTE: *The rule means to place the ladder at an angle where the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder.*	I	29 CFR 1926.1053(b)(5)(i)
7.	Step ladders shall be positioned fully "open" when in use, with spreader devices (braces) firmly locked.	I	29 CFR 1926.1053(a)(8); 29 CFR 1910.23(c)(2)

#	Requirement	Type V or I	Source
8.	Ladders shall be positioned so that employee "reach" into the work zone is minimized, to prevent inadvertent over-reaching or leaning.	I	10 CFR 851.22(b)
9.	The shifting, repositioning, or extending of ladders shall be accomplished only when the ladder is unoccupied.	I	29 CFR 1926.1053(b)(11); 29 CFR 1910.23(c)(6)
10.	In setting up an extension ladder, ensure that the upper section overlaps the bottom section in accordance with manufacturer instructions, and with the locking clips (stops) securely in place. NOTE: *Get help for a large or heavy ladder that is too awkward for one person to set-up and balance.*	I	29 CFR 1910.25(d)(2)(xiii) 29 CFR 1910.26(a)(2)(iii)
11.	A ladder set up in any location where it can be displaced (e.g., doorway, passageway) shall be secured to prevent accidental displacement, or other means provided to keep activities or traffic away from the area (e.g., barricade, signal person).	I	29 CFR 1926.1053(b)(8); 29 CFR 1910.23(c)(7)
12.	Employees shall be physically and mentally able to use ladders or perform ladder tasks without undue risk to their own or to others' safety.	I	10 CFR 851.10(a)(1)
13.	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.	I	29 CFR 1926.1053(b)(15); 29 CFR 1910.23(b)(9)
14.	Ladders shall be used in accordance with manufacturer-prescribed instructions, and used only for the purpose for which they are designed.	I	29 CFR 1926.1053(b)(4); 29 CFR 1910.23(b)(8)
15.	When performing work from a ladder, employees shall not stand above the highest safe standing level. These levels are: • The second rung from the top of a stepladder, • The fourth rung from the top of a single or extension ladder.	I	29 CFR 1926.1053(b)(3); 29 CFR 1926.1053 (b)(4); 29 CFR

#	Requirement	Type V or I	Source
	NOTE 1: *Some portable stepladders are designed with a working platform at the top. These platform or pulpit ladders may be used while standing at any accessible level.* NOTE 2: *Stability can be maintained by centering one's body weight between the ladder's side rails, positioning both feet on the same step facing forward, and avoiding such motions as over-reaching, pushing, or pulling.*		1926.1053(b)(13); 29 CFR 1910.23(c)(8)
16.	Metal ladders shall be used only in work locations where there is no potential exposure to energized electrical equipment or conductors.	I	29 CFR 1926.1053(b)(12)
17.	The ladder shall not be used during inclement weather, as defined in the current revision of HMIS-PRO-28034, A*dverse Weather*, where such exposure may affect safe usage.	I	10 CFR 851.10(a)(1)
18.	Shoes and hands, as well as ladder steps/rungs shall be free of oil, grease, mud or other substance (which may present a slipping hazard), prior to use.	I	29 CFR 1926.1053(b)(2)
19.	Employees shall ascend and descend ladders only with the free use of both hands to properly grasp the ladder (maintain 3-point contact of hands and feet at all times). NOTE 1: *For climbing, grasping the rungs of the ladder – not the side rails - is a recommended practice; rungs are easier to hold onto in case of foot slippage.* NOTE 2: *When climbing from the top of a ladder to a work surface, the User should carefully step sideways onto the surface with both hands firmly on the ladder rails until most of your weight is supported by the work surface. Reverse the process for descending.* NOTE 3: *Hand lines or tool belts shall be used when materials or tools are needed while working off of ladders; do not use hands for carrying items up/down a ladder.*	I	29 CFR 1926.1053(b)(21); 29 CFR 1926.1053(b)(22); 29 CFR 1910.23(b)(12); 29 CFR 1910.23(b)(13)
20.	Employees shall face the ladder when climbing, and stay centered between the side rails when ascending or descending.	I	29 CFR 1926.1053(b)(20); 29 CFR 1910.23(b)(11)

#	Requirement	Type V or I	Source
21.	Slip-resistant footwear, preferably with a defined heel, shall be worn to maintain balance and stability during ladder use. NOTE: *Avoid use of smooth soles, and presence of loose/dangling laces.*	I	10 CFR 851.10(a)(1)
22.	Employees working from a ladder shall ensure: • The ladder shall not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer's rated capacity. • The ladders shall be used only for the purpose for which they were designed. • The top or top step of stepladder shall not be used as a step except on ladders designed to allow such use such as a platform or pulpit ladder. NOTE: *Do not use a portable ladder where work may involve pushing, pulling, sudden transfer of weight, dynamic body movement or leverage, operation of power tools that produce a high level of torque, or other motion that might generate a sideways force significant enough to destabilize the ladder. Some possible methods of maintaining stability that may be used include (but are not limited to):* • *3-Points contact maintained during performance of task* • *Ladder secured to a fixed object* • *Co-worker hold ladder while user is on ladder* • *Maintain belt within ladder rails – do not overreach or lean to the side of the ladder.* *If these methods are inadequate due to the forces involved then the use of scaffolding, elevated work platforms, or aerial lifts should be used in these situations in accordance with their applicable procedures.*	I	10 CFR 851.10(a)(1)
23.	To maintain stability and prevent overload, only one person at a time is permitted to be positioned on ladder steps/rungs. **EXCEPTION:** *Ladders designed for use by 2 people.*	I	29 CFR 1926.1053(b)(3); 29 CFR 1926.1053(b)(4); 29 CFR 1910.23(a)(8)

#	Requirement	Type V or I	Source
24.	Material loads that may impact safe weight bearing capacity shall not be suspended or otherwise rested upon a ladder.	I	29 CFR 1926.1053(b)(3); 29 CFR 1910.23(a)(8)

2.1.7 Portable Ladder Accessories

#	Requirement	Type V or I	Source
1.	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 and approved by the manufacture of the ladder.	I	10 CFR 851.10(a)(1)

2.1.8 Portable Ladders - Repair/Disposition of Defective Ladders

#	Requirement	Type V or I	Source
1.	Field maintenance and repair of ladders shall be completed in accordance with manufacturer specifications.	I	29 CFR 1926.1053(b)(18)

2.1.9 Portable Ladder Training

#	Requirement	Type V or I	Source
1.	Employees who use ladders in the course of their work assignments, or perform annual portable ladder inspections, shall complete initial training via the established HMIS Computer-Based Training Course. **Portable Ladder Safety Training Course # 044391**	I	29 CFR 1926.1060(a)
2.	Employees who perform annual portable ladder inspections shall also complete the Competent Person Ladder Inspection-CBT. **Competent Person Ladder Inspection Course # 044392**	I	29 CFR 1926.1060(a)

#	Requirement	Type V or I	Source
3.	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.	I	29 CFR 1926.1060(b)

2.2 Fixed Ladders

2.2.1 Fixed Ladder Design

#	Requirement	Type V or I	Source
1.	Loads: All ladders, appurtenances, and fastenings shall be designed to meet the following load requirements: • The minimum design live load shall be a single concentrated load of 200 pounds. • The number and position of additional concentrated live-load units of 200 pounds each, as determined from anticipated usage of the ladder, shall be considered in the design. • 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. • The weight of the ladder and attached appurtenances together with the live load shall be considered in the design of rails and fastenings.	V	29 CFR 1910.27(a)(1)(i-iv); 29 CFR 1910.23(d)(1)
2.	Metal ladders: • Metal ladders and appurtenances shall be painted or otherwise treated to resist corrosion and rusting when location demands, such as ladders located in pits and other areas under floors with an atmosphere that causes corrosion and rusting.	I	29 CFR 1910.27(b)(1)(i); 29 CFR 1910.27(b)(7)(i); 29 CFR 1910.23(a)(6)

#	Requirement	Type V or I	Source
	• All rungs shall have a minimum diameter of three-fourths inch for metal ladders, except: o Ladders formed by individual metal rungs imbedded in concrete, which 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 atmosphere, individual metal rungs shall have a minimum diameter of 1 inch or shall be painted or otherwise treated to resist corrosion and rusting.		
3.	Wood ladders: • All rungs shall have a minimum diameter of 1 1/8 inches for wood ladders. • Wood ladders, when used under conditions where decay may occur, shall be treated with a nonirritating preservative, to prevent or minimize the accumulation of water on wood parts. • Wooden ladders are not coated with any material that may obscure structural defects.	I	29 CFR 1910.27(b)(1)(i); 29 CFR 1910.27(b)(7)(ii); 29 CFR 1910.23(b)(5)
4.	Fiberglass ladders: • Materials such as fiberglass or plastic composites may be used for fixed ladders provided the design, fabrication, and erection are in accordance with recognized design practice and meet live loads requirements as specified, 2.2.1.1 and additional design requirements as found in Section 2.2.1.5 through Section 2.2.1.14 of this document.		ANSI A14.3-2008(4.3.4)
5.	Rungs, cleats, and steps: • The distance between rungs, cleats, and steps shall not exceed 12 inches and shall be uniform throughout the length of the ladder. • The minimum clear length of rungs or cleats shall be 16 inches.	I	29 CFR 1910.27(b)(1)(i-v) 29 CFR 1910.27(c)(4); 29 CFR 1926.1053(a)(2); 29 CFR 1926.1053(a)(13); OSHA Letter of

#	Requirement	Type V or I	Source
	Exception: Manhole steps require a minimum rung width of 10 inches. • The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the fixed ladder shall be not less than 7 inches, except that when unavoidable obstructions are encountered refer to the following minimum clearances: o 1 and ½ inches minimum below centerline of rung to unavoidable obstruction behind ladder o 4 and ½ inches minimum above centerline of rung to unavoidable obstruction behind ladder. **Exception:** Manhole steps shall have a minimum toe clearance of 4.5 inches at the center of the rung. **Exception:** Elevator pit ladders shall have a minimum perpendicular distance of 4.5 inches. • Rungs, cleats, and steps shall be free of splinters, sharp edges, burrs, or projections which may be a hazard. • The rungs of an individual-rung ladder shall be so designed that the foot cannot slide off the end.		Interpretation to Charles Culver, 02/13/2004, "What OSHA will enforce as the minimum toe clearance when workers are using manhole rungs during construction work?," ASTM C478-13; 29 CFR 1910.23(d)(2); 29 CFR 1910.23(b)(1); 29 CFR 1910.23(b)(7); 29 CFR 1910.23(d)(10)
6.	Side rails: • 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. • For side rails that might be used as a climbing aid, a back clearance of not less than 2 and 1/2 inches, and a side clearance not less than 4 inches, from the ladder side rail to the nearest permanent object shall be maintained, excepting ladder anchorages, appurtenances, and unavoidable obstructions behind the ladder.	I	10 CFR 851.21(a)(4); 29 CFR 1910.23(a)(7); 29 CFR 1910.23(d)(4); 29 CFR 1910.23(d)(5); 29 CFR 1910.23(d)(6)

#	Requirement	Type V or I	Source
	○ 1 and ½ inches minimum clearance shall be maintained behind centerline of side rail to unavoidable obstruction behind ladder. • The side rails of through or side-step ladder extensions shall extend 3 ½ feet above parapets and landings. • 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 ½ feet minimum. • For through ladder extensions, the rungs shall be omitted from the extension and the side rails are flared to provide not less than 24 inches and not more than 30 inches of clearance. When a ladder safety system is provided, the maximum clearance between side rails of the extension must not exceed 36 inches. • Side rails shall be designed considering the applicable load requirements as listed in Section 2.2.1.1. • For side-step ladders, the side rails, rungs, and steps must be continuous in the extension.		
7.	Splices, fasteners, and welds: • All splices made by whatever means and fasteners shall meet design requirements for live loads imposed by persons anticipated to be occupying the ladder, and those listed in Section 2.2.1.1. • All splices and connections shall have smooth transition with original members and with no sharp or extensive projections. • Fastenings shall be an integral part of fixed ladder design. • All welding shall, at a minimum, meet requirements in the "*Code for Welding in Building Construction*" (AWSD1.0-1966).	I	29 CFR 1910.23(b)(7); 29 CFR 1910.23(d)(6)

#	Requirement	Type V or I	Source
	• Adequate means shall be employed to protect dissimilar metals from electrolytic action when such metals are joined.		
8.	Grab bars: • 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. • 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 7 inches. • Grab bars shall not protrude on the climbing side beyond the rungs of the ladder which they serve.	I	29 CFR 1910.23(d)(7); 29 CFR 1910.23(d)(2); 29 CFR 1910.23(d)(3); 29 CFR 1910.23(d)(8)
9.	Fixed ladders having a pitch greater than 90 degrees from the horizontal are not used	V	29 CFR 1910.23(d)(11)
10.	Climbing space clearances: Fixed ladders that do not have cages or wells have: • A clear width of at least 15 inches on each side of the ladder centerline to the nearest permanent object. • A minimum perpendicular distance of 30 inches from the centerline of the steps or rungs to the nearest object on the climbing side. When unavoidable obstructions are encountered, the minimum clearance at the obstruction may be reduced to 24 inches, provided deflector plates are installed.	V	29 CFR 1910.23(d)(13)
11.	Fixed ladders that extend more than 24 feet from a lower level For fixed ladders that extend more than 24 feet above a lower level, the employer must ensure:	I	29 CFR 1910.28(b)(9)

#	Requirement	Type V or I	Source

	• Existing fixed ladders.
	  o Each fixed ladder installed before November 19, 2018 is equipped with a personal fall arrest system, ladder safety system, cage, or well
	• New fixed ladders.
	  o Each fixed ladder installed on and after November 19, 2018, is equipped with a personal fall arrest system or a ladder safety system;
	• Replacement.
	  o 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.
	• Final deadline.
	  o On and after November 18, 2036, all fixed ladders are equipped with a personal fall arrest system or a ladder safety system.
	
	When a one-section fixed ladder is equipped with a personal fall protection or a ladder safety system or a fixed ladder is equipped with a personal fall arrest or ladder safety system on more than one section, the employer must ensure:
	• The personal fall arrest system or ladder safety system provides protection throughout the entire vertical distance of the ladder, including all ladder sections.
	• The ladder has rest platforms provided at maximum intervals of 150 feet.
	
	The employer must ensure ladder sections having a cage or well:
	• Are offset from adjacent sections
	• Have landing platforms provided at maximum intervals of 50 feet.
	
	Personnel may use a cage or well in combination with a personal fall arrest system or ladder safety system provided that the cage or well does not interfere with the operation of the system.		

#	Requirement	Type V or I	Source
12.	Cages, wells, and platforms used with fixed ladders: • Cages and wells installed on fixed ladders are designed, constructed, and maintained to permit easy access to, and egress from, the ladder that they enclose. • Cages and wells are continuous throughout the length of the fixed ladder, except for access, egress, and other transfer points. • Cages and wells are designed, constructed, and maintained to contain employees in the event of a fall, and to direct them to a lower landing. • Platforms used with fixed ladders provide a horizontal surface of at least 24 inches by 30 inches. • Cages or wells shall be provided on ladders of more than 20 feet to a maximum unbroken length of 50 feet. • Cages shall extend a minimum of 42 inches above the top of landing, unless other acceptable protection is provided. • Cages shall extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder, with bottom flared not less than 4 inches, or portion of cage opposite ladder shall be carried to the base. • Cages shall not extend less than 27 nor more than 28 inches from the centerline of the rungs of the ladder. • Cage shall not be less than 27 inches in width. • The inside of cages shall be clear of projections. • Vertical bars shall be located at a maximum spacing of 40 degrees around the circumference of the cage; this	I	29 CFR 1910.23(d)(13); 29 CFR 1910.23(d)(4); 29 CFR 1910.29(g)

#	Requirement	Type V or I	Source
	will give a maximum spacing of approximately 9 1/2 inches, center to center. • Ladder wells shall have a clear width of at least 15 inches measured each way from the centerline of the ladder. • Smooth-walled wells shall be a minimum of 27 inches from the centerline of rungs to the well wall on the climbing side of the ladder. • Where other obstructions on the climbing side of the ladder with a well exist, there shall be a minimum of 30 inches from the centerline of the rungs. • Ladder safety devices may be used on tower, water tank, and chimney ladders over 20 feet in unbroken length in lieu of cage protection. No landing platform is required in these cases. All ladder safety devices such as those that incorporate lifelines, friction brakes, and sliding attachments shall meet the design requirements of the ladders which they serve.		
13.	Landing platforms and hatches: step across distances and platforms • 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. • When ladders are used to ascend to heights exceeding 24 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.	I	29 CFR 1910.23(d)(12); 29 CFR 1910.29(g); 29 CFR 1910.239(d)(9)

#	Requirement	Type V or I	Source
	• 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. • One rung of any section of ladder shall be located at the level of the landing laterally served by the ladder. 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. • When a fixed ladder terminates at a hatch, the hatch cover: o Opens with sufficient clearance to provide easy access to or from the ladder. o Opens at least 70 degrees from horizontal if the hatch is counterbalanced.		
14.	Ladder Safety Systems • Each ladder safety system allows the employee to climb up and down using both hands and does not require that the employee continuously hold, push, or pull any part of the system while climbing. • The connection between the carrier or lifeline and the point of attachment to the body harness or belt does not exceed 9 inches. • Mountings for rigid carriers are attached at each end of the carrier, with intermediate mountings spaced, as necessary, along the entire length of the carrier so the system has the strength to stop employee falls. • Mountings for flexible carriers are attached at each end of the carrier and cable guides for flexible carriers are installed at least 25 feet apart but not more than 40 feet apart along the entire length of the carrier.	V	29 CFR 1910.29(i)

#	Requirement	Type V or I	Source
	• The design and installation of mountings and cable guides does not reduce the design strength of the ladder. • Ladder safety systems and their support systems are capable of withstanding, without failure, a drop test consisting of an 18-inch drop of a 500-pound weight. • Personal fall protection systems. Body belts, harnesses, and other components used in personal fall arrest systems, work positioning systems, and travel restraint systems must meet the requirements of DOE-0346.		

2.2.2 Fixed Ladder Use

#	Requirement	Type V or I	Source
1.	A fixed ladder shall be used only after it has been determined by inspection to be in good condition and current within its inspection schedule. Before using any fixed ladder in any facility, HMIS personnel shall verify that the fixed ladder has a current inspection per the owning Contractor's ladder inspection procedure, and shall follow the owning Contractor's process for fixed ladder use. If the fixed ladders only have design criteria non-compliances, the deficiencies shall be mitigated to an acceptable level by communicating the deficiencies to the users so they are aware and can use caution when using the ladder. For HMIS facility fixed ladders, if a fixed ladder is found to have one or more 29 CFR 1910.23, 29 CFR 1910.28 or 29 CFR 1910.29 design criteria non-compliances, the fixed ladder may be demarcated, evaluated for use, and used provided the following minimum requirements are met: • All HMIS non-compliant fixed ladders require indication (tag, signage, and/or rung caps) at ladder access points. A brass inspection tag shall be applied to HMIS design non-compliant fixed ladders and shall	I	29 CFR 1910. 23(b)(9); 29 CFR 1910. 23(b)(10); 29 CFR 1910. 28(b)(9); 29 CFR 1910. 29(g) and (i); ANSI A14.3-56

#	Requirement	Type V or I	Source

	be stamped "Contact Facility Management Prior to Ladder Use."
	
	Prior to use, a fixed ladder with design deficiencies will have one of the following completed:
	
	The Fixed Ladder Use Justification (FLUJ) (Site Form A-6007-900) identifying the design deficiencies and justification for use. The form will be reviewed and signed by Safety, the Facility or Building Manager, and Engineering (only required for structural deficiencies such as bent rungs, etc.). Once complete the form will be made accessible in the SHRI database by the Building Manager or their Representative.
	
	• A Fall Protection Work Permit (FPWP), site form A-6004-286, which at a minimum shall include:
	  ○ All design non-compliances noted for the fixed ladder;
	  ○ Anticipated ladder use frequency;
	  ○ Ladder use requirements as listed in Sections 2.2.2.3 through 2.2.2.11 of this document for review by the ladder user(s) prior to ladder use;
	• The Building Manager or their Representative will post an electronic copy of the FPWP or the FLUJ in the Safety & Health Reference Information (SHRI) database.
	
	FPWP's used to document design deficiencies need to be updated annually, as required by DOE-0346, *Hanford Site Fall Protection Program (HSFPP)*.
	
	FLUJs used to document design deficiencies of fixed ladders shall be updated when ladders are re-inspected (typically every 5 years).		

2.	When working from a fixed ladder where a fall hazard exists, refer to and follow the requirements of DOE-0346, Hanford Site Fall Protection Program (HSFPP) before the task begins, including completion of a DOE-0346 required Fall Protection Work Permit (site form A-6004-286). NOTE: *This requirement does not apply when the work is determined by the responsible person to be emergency in*	I	DOE-0346

#	Requirement	Type V or I	Source
	nature and immediately necessary to ensure worker safety or to protect the environment, site systems, services, or structures or to situations where an OSHA compliant ladder is used solely for access purposes (ascending and/or descending) less than 24 feet in height.		
3.	When ascending/descending a ladder, face the ladder and maintain a three-point contact at all times. Three-point contact consists of two feet and one hand or two hands and one foot which is safely supporting the user's weight when ascending/descending a ladder. NOTE 1: *For climbing, grasping the rungs of the ladder – not the side rails - is a recommended practice; rungs are easier to hold onto in case of foot slippage.* NOTE 2: *When climbing from the top of a ladder to a work surface, the User should carefully step onto the surface with both hands firmly on the ladder rails until most of your weight is supported by the work surface. Reverse the process for descending.*	I	29 CFR 1910.23(b)(12); 29 CFR 1910.23(b)(13); ANSI A14.3-2008(9.2)
4.	Do not carry tools or equipment while ascending/descending a ladder. Both hands and arms are to remain free for climbing. Carry hand tools in a pouch holster, tool belt, or otherwise secure, to help avoid creating a hazard. Use alternative methods, other than being carried by the ladder user, to handle materials/supplies, such as hand lines.	I	29 CFR 1910.23(b)(13); ANSI A14.3-2008(9.2)
5.	Never jump or slide down from a ladder or climb more than one rung/step at one time.	I	ANSI A14.3-2008(9.2)
6.	Wear slip-resistant/non-slip footwear when climbing a ladder. NOTE: *It is highly recommended that the footwear used when ascending/descending a fixed ladder have a defined heel. The use of footwear with a defined heel provides additional security of foot placement on fixed ladder rungs.*	I	ANSI A14.3-2008(9.2)
7.	Avoid using greasy or slippery hands or gloves while ascending/descending a ladder.	I	ANSI-A14.3-2008(9.2)

#	Requirement	Type V or I	Source
8.	Keep ladder free from oil, grease, or slippery materials on platforms, rungs and gripping surfaces. Footwear should be kept clean.	I	ANSI A14.3-2008(9.2)
9.	Avoid ascending/descending a ladder during high winds, storms, or when ice/frost or snow covers the ladder.	I	ANSI A14.3-2008(9.2)
10.	Employees shall be physically and mentally able to use ladders or perform ladder tasks without undue risk to their own or to others' safety. Persons who tire easily, or who have physical or other limitations which prevent a person from safely climbing a ladder, are not be permitted to use fixed ladders.	I	ANSI A14.3-2008(9.2)
11.	Fixed ladder hatches or covers shall remain in place unless being used for access. If the hatch or cover must remain open it shall be protected by the use of the measures described in DOE-0346.	I	DOE-0346

2.2.3 Fixed Ladder Inspection

NOTE: *As used in this section, a Competent Person is one who by way of training, skill, and practical experience is capable of identifying existing and predictable hazards relating to fixed ladders in the work environment and has authorization to take prompt corrective measures to eliminate such hazards.*

#	Requirement	Type V or I	Source
1.	All fixed ladders shall be maintained in a safe condition. All HMIS fixed ladders shall be inspected regularly by competent person(s) from the bargaining unit craft responsible for such inspections (see Appendix A for fixed ladder inspection criteria.) • The intervals between inspections shall be determined by fixed ladder use and exposure. • The scheduled inspection of fixed ladders shall not exceed a period of 5 years.	I	29 CFR 1910. 23(b)(9); 29 CFR 1926.1053(b)(15); 29 CFR 1926.1053 (b)(17)

#	Requirement	Type V or I	Source
	• All fixed ladders covered by this procedure are to have an initial inspection by November 15, 2013, unless they meet one of the following exceptions: **Exception 1:** *Ladders deemed infrequently used (example, used less than once a year) are exempted from the November 15, 2013, initial inspection date, provided these ladders are inspected before use. HMIS ladders not tagged by November 15th are not to be used until they have been properly inspected and tagged. Means of identification include access point signage, "do not use" tagging, marking as defective, blocking, or other control of use (e.g., for a ladder in a permit-required confined space, identification of the before-use inspection requirement for the ladder in the confined space database.)* **Exception 2**: *The scheduled inspection of fixed ladders is not intended to apply to fixed ladders no longer intended for use, such as fixed ladders in deactivated facilities and fixed ladders subject to a facility long-term stewardship program. HMIS ladders not tagged by November 15th are not to be used until they have been properly inspected and tagged.*		
2.	HMIS fixed ladders shall be inspected for design criteria and condition criteria (see Appendix A). Design criteria inspection shall be to requirements found in 29 CFR 1910.23(d), *Fixed Ladders* and 29 CFR 1910.28(b)(9) *Fixed Ladders*. NOTE 1: *HMIS Crane & Rigging Services inspects HMIS fixed ladders per maintenance procedure CRS-PRO-CAR-61345(7-GN-184), Periodic Condition Inspection of Fixed Ladders, with inspection criteria based on 1910.27.* NOTE 2: *The Building Manager or their Representative will establish fixed ladder inspection schedules along with work management preparation of ladder inspection work packages. Inspections will be coordinated with HMIS Crane & Rigging. A fixed ladder inventory including inspection information shall be maintained in the Safety & Health Reference Information (SHRI) database by the Building Manager or their Representative.*	I	29 CFR 1910.23(d); 29 CFR 1910.28(b)(9);
3.	HMIS fixed ladders passing design/condition inspection shall be identified as such with visible marking such as a brass tag	I	10 CFR 851.21(a)

#	Requirement	Type V or I	Source
	(see Appendix A). The facility shall be notified by the inspectors of each fixed ladder not passing design/criteria inspection, and of the inspection criteria not compliant. Fixed ladders found to be defective, with an expired inspection, or otherwise in substandard condition shall be: • Immediately removed from service for repair by the facility (tagged-out per HMIS-PRO-23749, *Miscellaneous Facility Tags*, if needed). Ladders to be removed from service until repaired include ladders with structural defects, such as, but not limited to, broken or missing rungs, cleats, or steps, broken or split rails, or corroded components, -or- • In the case of 29 CFR 1910.27 design criteria non-compliant fixed ladders in HMIS facilities, other than ladders with structural defects (such as, but not limited to, broken or missing rungs, cleats, or steps, broken or split rails, or corroded components) the facility may elect to demarcate each design non-compliant fixed ladder with access point signage and/or access point rung caps indicating "Contact Facility Management before using this ladder". The Facility may then elect to follow the process outlined in Section 2.2.2.1 for use of the design non-compliant fixed ladder. NOTE 1: *Only the most recent inspection tag shall remain on the ladder.* NOTE 2: *See Section 2.2.2.1 Fixed Ladder Use for requirements for use of design non-compliant fixed ladders.*		

2.2.4 Fixed Ladder Training

#	Requirement	Type V or I	Source
1.	Employees who use ladders in the course of their work assignments, or perform annual fixed ladder inspections, shall complete initial training via the established HMIS Computer-Based Training Course.	I	29 CFR 1926.1060 (a)

#	Requirement	Type V or I	Source
	Portable Ladder Safety Training Course # 044391		
2.	Employees who perform annual fixed ladder inspections shall also complete the Competent Person Ladder Inspection-CBT. **Competent Person Fixed Ladder Inspection Course #044393**	I	29 CFR 1926.1060 (a)

2.3 Mobile Ladder Stands

2.3.1 Mobile Ladder Stand Design

#	Requirement	Type V or I	Source
1.	Loads: • The design working load of ladder stands shall be calculated on the basis of one or more 300-pound persons including materials and equipment. The load shall be applied uniformly to a 3 1/2 inches wide area front to back at the center of the width span with a safety factor of four. • All ladder stands shall be capable of supporting at least four times the design working load.	I	29 CFR 1910.23(e)(1)(iii); ANSI 14.7 4.2.2; ANSI 14.7 4.2.1; ANSI 14.7 5.3.2
2.	Surfaces: • The ladder stand material shall be protected against corrosion or deterioration. • All exposed surfaces shall be free from sharp edges, burrs or other safety hazards.	I	29 CFR 1910.23(b)(6); 29 CFR 1910.23(b)(7); 29 CFR 1910.23(e)(1)(ii)
3.	Steps and Handrails: • Ladder stands shall have a minimum step width of 16 inches. • The steps of ladder stands shall be fabricated from slip resistant treads.	I	29 CFR 1910.23(b)(4)

#	Requirement	Type V or I	Source
	• Steps shall be uniformly spaced, and sloped, with a rise of not less than 9 inches, nor more than 10 inches, and a depth of not less 7 inches. The slope of the steps section shall be a minimum of 55 degrees and a maximum of 60 degrees measured from the horizontal. • All ladder stands with a top step height of 4 feet to 10 feet shall be provided with handrails. The use of removable gates or non-rigid members such as chains shall be permitted for special use applications. • Mobile ladder stands with a top step height above 10 feet have the top step protected on three sides by a handrail with a vertical height of at least 36 inches and top steps that are 20 inches or more, front to back, have a midrail and toeboard. Removable gates or non-rigid members, such as chains, may be used instead of handrails in special-use applications. • Mobile ladder stands and platforms with a top step height of 4 feet or above have handrails with a vertical height of 29.5 inches to 37 inches, measured from the front edge of a step. Removable gates or non-rigid members, such as chains, may be used instead of handrails in special-use applications.		29 CFR 1910.23(e)(1); 29 CFR 1910.23(e)(2); ANSI 14.7 4.3.2; ANSI 14.7 5.3.3; ANSI 14.7 4.4.1;
4.	Work Levels/Platforms: • Ladder stands shall have a minimum platform width of at least 18 inches • The maximum work level height shall not exceed four (4) times the minimum or least base dimensions of any mobile ladder stand. NOTE: *Where the basic mobile unit does not meet this requirement, suitable outrigger frames shall be employed to achieve this least base dimension, or provisions shall be made to guy or brace the unit against tipping.* • The supporting structure for the work level shall be rigidly braced, using adequate cross bracing or	I	29 CFR 1910.23(e)(1); 29 CFR 1910.23(e)(3); ANSI 14.7 4.4; DOE-0346, Section 5.1

#	Requirement	Type V or I	Source
	diagonal bracing with rigid platforms at each work level. • Mobile ladder stand platforms with a platform height of 4 to 10 feet have, in the platform area, handrails with a vertical height of at least 36 inches and midrails. • All ladder stand platforms with a platform height above 10 feet have guardrails and toeboards on the exposed sides and ends of the platform. • Removable gates or non-rigid members, such as chains, may be used on mobile ladder stand platforms instead of handrails and guardrails in special-use applications.		
	Base and Wheels/Casters: • The minimum base width of a mobile ladder stand shall not be less than ¼ the maximum work level height. • Wheels and casters, when under load, shall support their proportional share of four times the rated load, plus the proportional share of the unit's weight. • The maximum length of the base section shall be the total length of combined steps and top assembly, measured horizontally, plus 5/8 inch per step of rise. • Wheels or casters shall be properly designed for strength and dimensions to support four times the design working load. • At least two the four casters on mobile ladder stands shall be provided with a positive wheel and swivel lock to prevent movement.	I	29 CFR 1910.23(e)(1); ANSI 14.7 4.3; ANSI 14.7 4.4

2.3.2 Mobile Ladder Stand Use

#	Requirement	Type V or I	Source
1.	A mobile ladder stand User shall verify the safe condition of a mobile ladder stand before use by ensuring that all bolts, rivets, and fasteners are tight; side rails and steps are free of slippery substances and not bent or damaged; the ladder operates correctly and with stability; and the overall condition is satisfactory. This inspection shall be done before each use.	I	29 CFR 1926.1053(b)(15); 29 CFR 1910.23(b)(9); ANSI A14.7-2011 (6.2)
2.	Mobile ladder stands found to be defective, with an expired annual inspection, or otherwise in substandard condition shall be immediately removed from service for repair (tagged-out, if needed), or destroyed.	I	29 CFR 1926.1053(b)(16); 29 CFR 1910.23(b)(10); ANSI A14.7-2011 (6.2 & 6.3)
3.	Mobile ladder stands shall be used in accordance with manufacturer-prescribed instructions, and used only for the purpose for which they are designed.	I	29 CFR 1926.1053(b)(4); 29 CFR 1910.23(b)(8); ANSI A14.7-2011 (8.1)
4.	When ascending a ladder mobile ladder stand, face the ladder and maintain a three-point contact at all times. Three-point contact consists of two feet and one hand or two hands and one foot which are safely supporting the user's weight when ascending/descending a ladder.	I	29 CFR 1926.1053 (b)(21) & (b)(22); 29 CFR 1910.23(b)(11) and (10); ANSI A14.7-2011 (6.9 & 6.10)
5.	Occupied mobile ladder stands shall not be moved.	V	ANSI A14.7-2011 (6.4)
6.	Mobile ladder stands shall not be loaded beyond rated loads.	V	ANSI A14.7-2011 (6.5)
7.	Materials and equipment shall not be stored on the steps or platform of a mobile ladder stand.	V	ANSI A14.7-2011 (6.6)
8.	Additional height shall not gained by the additional of any type of extension or an object being placed on the mobile ladder stand.	V	ANSI A14.7-2011 (6.7)
9.	Users are cautioned to take proper safety measures when mobile ladder stands are used in areas where electrical lines	I	ANSI A14.7-2011 (6.11) DOE-0359

#	Requirement	Type V or I	Source
	exist. The precautions should comply with limitations in the Hanford Site Electrical Safety Program (DOE-0359)		
10.	Occupied mobile ladder stands shall not be placed in front of a door unless door is secured in an open position, locked, attended or barricaded.	V	ANSI A14.7-2011 (6.12)
11.	Overreaching, while on a mobile ladder stand, could cause instability and result in a fall. Always keep the mobile ladder stand in close proximity to the work. Descend and relocate the mobile ladder stand to prevent overreaching.	V	ANSI A14.7-2011 (6.13)
12.	Mobile ladder stands and ladder stand platforms are intended to be used only on a level surface. They are not to be used on uneven or sloping surfaces.	V	ANSI A14.7-2011 (6.14)
13.	Mobile ladder stands and platforms equipped with spring loaded casters (no positive locking mechanism) shall be accessed only from the ground. 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.	V	ANSI A14.7-2011 (6.16)
14.	Users shall only stand on steps or platforms	V	ANSI A14.7-2011 (6.17)
15.	Keep mobile ladder stand free from oil, grease, or slippery materials on platforms, rungs and gripping surfaces. Footwear should be kept clean.	I	ANSI A14.7-2011 (6.8)
16.	Employees shall be physically and mentally able to use ladders or perform ladder tasks without undue risk to their own or to others' safety. Persons who tire easily, or who have physical or other limitations which prevent a person from safely climbing a mobile ladder stand, are not be permitted to use mobile ladder stands.	I	ANSI A14.7-2011 (6.18)
17.	When working from a mobile ladder stand where a fall hazard exists, refer to and follow the requirements of DOE-0346, Hanford Site Fall Protection Program (HSFPP) before the task begins, including completion of a DOE-0346 required Fall Protection Work Permit (site form A-6004-286). NOTE: *This requirement does not apply when the work is determined by the responsible person to be emergency in*	I	DOE-0346

#	Requirement	Type V or I	Source
	nature and immediately necessary to ensure worker safety or to protect the environment, site systems, services, or structures.		

2.3.3 Mobile Ladder Stand Inspection

NOTE: *As used in this section, a Competent Person is one who by way of training, skill, and practical experience is capable of identifying existing and predictable hazards relating to fixed ladders in the work environment and has authorization to take prompt corrective measures to eliminate such hazards.*

#	Requirement	Type V or I	Source
1.	All mobile ladders stands shall be maintained in a safe condition. All HMIS mobile ladder stands shall be inspected annually by competent person(s) from the bargaining unit craft responsible for such inspections (see Appendix A for inspection criteria.)	I	29 CFR 1926.1053(b)(15); 29 CFR 1926.1053 (b)(17)

2.3.4 Mobile Ladder Stand Training

#	Requirement	Type V or I	Source
1.	Employees who use ladders in the course of their work assignments, or perform annual mobile ladder stand inspections, shall complete initial training via the established HMISComputer-Based Training Course. **Portable Ladder Safety Training Course # 044391**	I	29 CFR 1926.1060(a)
2.	Employees who perform annual mobile ladder stand inspections shall also complete the Competent Person Ladder Inspection-CBT. **Competent Person Ladder Inspection Course # 044392**	I	29 CFR 1926.1060(a)
3.	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.	I	29 CFR 1926.1060(b)

2.4 Step Bolts and Manhole Steps

2.4.1 Step Bolts and Manhole Steps Design

#	Requirement	Type V or I	Source
1.	Step Bolts. • Each step bolt installed on or after January 17, 2017 in an environment where corrosion may occur is constructed of, or coated with, material that protects against corrosion. • Each step bolt is designed, constructed, and maintained to prevent the employee's foot from slipping off the end of the step bolt. • Step bolts are uniformly spaced at a vertical distance of not less than 12 inches and not more than 18 inches apart, measured center to center. The spacing from the entry and exit surface to the first step bolt may differ from the spacing between the other step bolts. • Each step bolt has a minimum clear width of 4.5 inches. • The minimum perpendicular distance between the centerline of each step bolt to the nearest permanent object in back of the step bolt is 7 inches. When the employer demonstrates that an obstruction cannot be avoided, the distance must be at least 4.5 inches. • Each step bolt installed before January 17, 2017 is capable of supporting its maximum intended load. • Each step bolt installed on or after January 17, 2017 is capable of supporting at least four times its maximum intended load.	V	29 CFR 1910.24(a)
2.	Manhole Steps • Each manhole step is capable of supporting its maximum intended load.	V	29 CFR 1910.24(b)

#	Requirement	Type V or I	Source
	• Each manhole step installed on or after January 17, 2017: o Has a corrugated, knurled, dimpled, or other surface that minimizes the possibility of an employee slipping. o Is constructed of, or coated with, material that protects against corrosion if the manhole step is located in an environment where corrosion may occur. o Has a minimum clear step width of 10 inches. o Is uniformly spaced at a vertical distance not more than 16 inches apart, measured center to center between steps. The spacing from the entry and exit surface to the first manhole step may differ from the spacing between the other steps. o Has a minimum perpendicular distance between the centerline of the manhole step to the nearest permanent object in back of the step of at least 4.5 inches. o Is designed, constructed, and maintained to prevent the employee's foot from slipping or sliding off the end.		

2.4.2 Step Bolts and Manhole Steps Use

#	Requirement	Type V or I	Source
1.	Step bolts or manhole steps shall be used only after it has been determined by inspection to be in good condition and current within its inspection schedule. Before using any step bolt or manhole step in any facility, HMIS personnel shall verify that the Step bolts or manhole step has a current inspection per the owning Contractor's ladder inspection procedure, and shall follow the owning Contractor's process for step bolt or manhole step use.	I	29 CFR 1910. 23(b)(9); 29 CFR 1910. 23(b)(10); ANSI A14.3-56

#	Requirement	Type V or I	Source
	For HMIS facility step bolt or manhole step, if a step bolt or manhole step is found to have one or more 29 CFR 1910.24 design criteria non-compliances, the step bolt or manhole step may be demarcated, evaluated for use, and used provided the following minimum requirements are met: • All HMIS non-compliant step bolt or manhole steps require indication (tag, signage, and/or rung caps) at ladder access points indicating "Contact Facility Management Prior to Ladder Use." • All HMIS non-compliant step bolt or manhole steps use requires completion of a Fall Protection Work Permit (FPWP), site form A-6004-286, which at a minimum shall include: o All design non-compliances noted for the step bolt or manhole step; o Anticipated use frequency; o Ladder use requirements as listed in Sections 2.3.2.2 through 2.3.2.10 of this document for review by the user(s) prior to use; • Facility retention of a copy of the FPWP for reference, for future uses of the step bolt or manhole step. The Building Manager or their Representative will post an electronic copy of the FPWP in the Safety & Health Reference Information (SHRI) database. NOTE: *For FPWP's used to document minor noncompliant conditions that do not create a fall hazard if the stepbolt or manhole step is used the FPWP shall be updated when the stepbolt or manhole step is reinspected. If a fall hazard exists due to the condition of the ladder the FPWP may only be valid for a one year.* The brass inspection tag applied to the HMIS design non-compliant step bolt or manhole step ladder shall be stamped "Contact Facility Management Prior to Ladder Use".		
2.	When working from a step bolt or manhole step where a fall hazard exists, refer to and follow the requirements of DOE-0346, Hanford Site Fall Protection Program (HSFPP) before	I	DOE-0346

#	Requirement	Type V or I	Source
	the task begins, including completion of a DOE-0346 required Fall Protection Work Permit (site form A-6004-286). NOTE: *This requirement does not apply when the work is determined by the responsible person to be emergency in nature and immediately necessary to ensure worker safety or to protect the environment, site systems, services, or structures or to situations where an OSHA compliant ladder is used solely for access purposes (ascending and/or descending) less than 24 feet in height.*		
3.	When ascending/descending a step bolt or manhole step, face the step bolt or manhole step and maintain a three-point contact at all times. Three-point contact consists of two feet and one hand or two hands and one foot which is safely supporting the user's weight when ascending/descending a ladder. NOTE 1: *For climbing, grasping the rungs of the step bolt or manhole step – is a recommended practice; rungs are easier to hold onto in case of foot slippage.* NOTE 2: *When climbing from the top of a step bolt or manhole step to a work surface, the User should carefully step onto the surface with both hands firmly on the ladder rails until most of your weight is supported by the work surface. Reverse the process for descending.*	I	29 CFR 1910.23(b)(12); 29 CFR 1910.23(b)(13) ANSI A14.3-2008(9.2)
4.	Do not carry tools or equipment while ascending/descending a step bolt or manhole step. Both hands and arms are to remain free for climbing. Carry hand tools in a pouch holster, tool belt, or otherwise secure, to help avoid creating a hazard. Use alternative methods, other than being carried by the user, to handle materials/supplies, such as hand lines.	I	29 CFR 1910.23(b)(13); ANSI A14.3-2008(9.2)
5.	Never jump or slide down from a step bolt or manhole step or climb more than one rung/step at one time.	I	ANSI A14.3-2008(9.2)
6.	Wear slip-resistant/non-slip footwear when climbing a ladder. NOTE: *It is highly recommended that the footwear used when ascending/descending a fixed ladder have a defined heel. The use of footwear with a defined heel provides additional security of foot placement on step bolt or manhole step rungs.*	I	ANSI A14.3-2008(9.2)

#	Requirement	Type V or I	Source
7.	Avoid using greasy or slippery hands or gloves while ascending/descending.	I	ANSI-A14.3-2008(9.2)
8.	Keep step bolt or manhole steps free from oil, grease, or slippery materials on platforms, rungs and gripping surfaces. Footwear should be kept clean.	I	ANSI A14.3-2008(9.2)
9.	Avoid ascending/descending when exposed during high winds, storms, or when ice/frost or snow covers the ladder.	I	ANSI A14.3-2008(9.2)
10.	Employees shall be physically and mentally able to use tasks without undue risk to their own or to others' safety. Persons who tire easily, or who have physical or other limitations which prevent a person from safely climbing, are not be permitted to use step bolt or manhole steps.	I	ANSI A14.3-2008(9.2)

2.4.3 Step Bolts and Manhole Steps Inspection

#	Requirement	Type V or I	Source
1.	Step bolts • Each step bolt is inspected at the start of the work shift and maintained in accordance with §1910.22. • Any step bolt that is bent more than 15 degrees from the perpendicular in any direction is removed and replaced with a step bolt that meets the requirements of this section before an employee uses it.	V	29 CFR 1910.24(a)(8&9)
2.	Manhole steps Each manhole step is inspected at the start of the work shift and maintained in accordance with §1910.22.	V	29 CFR 1910.24(b)(3)

2.4.4 Step Bolts and Manhole Steps Training

#	Requirement	Type V or I	Source
1.	Employees who use Step Bolts and Manhole Steps in the course of their work assignments, or perform Step Bolts and Manhole Steps inspections, shall complete initial training via the established HMIS Computer-Based Training Course. **Portable Ladder Safety Training Course # 044391**	I	29 CFR 1926.1060(a)
2.	Employees who perform Step Bolts and Manhole Steps inspections shall also complete the Competent Person Ladder Inspection-CBT. **Competent Person Ladder Inspection Course # 044392**	I	29 CFR 1926.1060(a)
3.	Employees who use Step Bolts and Manhole Steps 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.	I	29 CFR 1926.1060(b)

3.0 RECORD IDENTIFICATION

All records are generated, processed, and maintained in accordance with HMIS-PRO-RM-10588, *Records Management Processes*.

Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility
Work Record	Facility/Project Designated Personnel	Facility Work Management
Site Form A-6004-286, *Fall Protection Work Permit (FPWP)*	Facility/Project Designated Personnel	Work Planning Documentation/ Work Record
Site Form A-6007-900, *Fixed Ladder Use Justification Form*	Facility/Project Designated Personnel	Work Planning Documentation/ Work Record

4.0 SOURCES

4.1 Source Requirements

29 CFR 1910, *Occupational Safety and Health Standards*
29 CFR 1926, *Safety and Health Regulations for Construction*
ANSI A14.3-56, *Safety Code for Fixed Ladders*
ANSI A14.3-2008, *Ladders-Fixed- Safety Requirements*
10 CFR 851, *Worker Safety & Health Program*
DOE-0346, *Hanford Site Fall Protection Program (HSFPP)*
OSHA Letter of Interpretation to Charles Culver, 02/13/2004, (*What OSHA will enforce as the minimum toe clearance when workers are using manhole rungs during construction work.)*
ASTM C478-13, *Standard Specification for Precast Reinforced Concrete Manhole Sections*

4.2 References

HMIS-PRO-RM-10588, *Records Management Processes*
CRS-PRO-CAR-61345 (7-GN-184), HMIS*, Periodic Condition Inspection of Fixed Ladders*

4.3 Forms

A-6004-286, *Fall Protection Work Permit*
A-6006-900, *Fixed Ladder Use Justification Form*

Appendix A. Ladder Inspection

1.0 PURPOSE

This guidance is for inspection of permanently affixed (fixed) ladders, portable ladders, mobile ladder stands, and mobile ladder stand platforms to ensure conformance to the requirements of 29 CFR 1910 Subpart D. Article 1910 25-27 and 29, that requires:

- All ladders shall be maintained in a safe condition.
- All portable ladders and mobile ladder stands shall be inspected regularly, with the intervals between inspections being determined by use and exposure, at a minimum annually.
- All fixed ladders shall be inspected regularly, with the intervals between inspections being determined by use and exposure, at a minimum every five years. **Note: The scheduled inspection of fixed ladders is not intended to apply to fixed ladders no longer intended for use, such as fixed ladders in deactivated facilities and fixed ladders subject to a facility long-term stewardship program.

This procedure does not address step stools (less than 32” in height), stage or scaffold platforms, or access ladders used on scaffolds, cranes or other mobile equipment.

2.0 PRECAUTIONS AND LIMITATIONS

- Exercise caution if/when working at elevated heights to inspect fixed ladders. Use personal fall protection where required (see DOE-0346, *Hanford Site Fall Protection Program [HSFPP]*).

3.0 PREREQUISITES

3.1 Tools, Equipment, and Materials

- Set of open end wrenches
- Rags
- Approved cleaning solvent
- Measuring tape
- Flat file

3.2 Special Personnel Requirements

Designate competent persons from the bargaining unit/craft responsible for inspecting the type of ladder (fixed, portable, etc.) who by the way of training, skill, and practical experience is capable of identifying existing and predictable hazards relating to the type of ladder in the work environment and has authorization to take prompt corrective measures to eliminate such hazards.

4.0 PERFORMANCE

4.1 Fixed Ladder Inspection

1. PERFORM inspections per the following checklist, as applicable, THEN GO TO section 4.4:

- Loose, worn or bent rungs or side rails.
- Loose screws, bolts or other metal parts.
- No damaged or cracked welds for braces, rungs or joints in side rails.
- Cracked, split or broken side rails, braces, or rungs.
- Metal slivers on side rails or rungs.
- Oily deposits on rungs or side rails.
- Damage to non-slip treads or coating on rungs.
- Splices and connections in side rails are smooth and secure.
- No excessive rusting, corrosion, or deterioration on outside ladders.
- Ladder cages are properly welded and are not bent to impair climbing envelope and have no physical protrusions through cage envelope.
- Ladder safety device is securely fastened to rungs and no deterioration is evident. Installed slide device moves easily in track and stops downward motion when sudden load applied. Ladder up safety device at top of ladder (if used) is easily tripped and is secured to ladder.
- Safety chains or safety swing gate at top is properly secured and in good working condition.
- Ladder design criteria and clearances as listed in HMIS-RD-24243 are met.

* Note: When performing design criteria and clearances inspections, reference 29 CFR 1910.27, Fixed Ladders for minimum fixed ladder design criteria and clearances. HMIS Crane & Rigging Services inspects HMIS fixed ladders per maintenance procedure CRS-PRO-CAR-61345 (7-GN-184), Periodic Condition Inspection of Fixed Ladders, with inspection criteria based on 1910.27.

4.2 Portable Ladder Inspection

- PERFORM inspections and minor adjustments per the following checklist, as applicable, THEN GO TO section 4.4:

- Manufacturer Warning/Instruction Labeling is present & legible; Sticker which includes Duty Rating, Manufacturer Name and ladder Model Number will provide necessary structural capacity information of the ladder in case manufacture label is missing during normal use.

- Steps/Rungs are firmly attached and intact and have slip resistant surfaces.

- Support braces, rivets, bolts, screws & other hardware/fittings securely in place.

- Steps, rungs, and side rails free of oil, grease, mud, or surface moisture.

- Extension Ladders- Adequate condition of rope and pulley assembly.

- Spreaders or other locking devices taut and functional.

- Splinters, Sharp Edges, and Burrs are not present.

- Non-slip safety feet are aligned, securely attached, and in good condition.

- Dents, bending or rusting of metal ladders to render the ladder unusable is not evident.

- Presence of shakes, warping, decay, cracks, corrosion, or other irregularities to render the ladder unusable is not evident.

4.3 Mobile Ladder Stand/Mobile Ladder Stand Platform Inspections

1. PERFORM inspections and minor repairs per the following list as applicable, THEN GO TO section 4.4:

- Are all exposed surfaces of mobile ladder stand/platform free from sharp edges, burrs, or other safety hazards?
- Is the maximum work level height less than or equal to four times the minimum or least base dimension of the mobile ladder stand/platform?

NOTE: *Suitable outrigger frames may be used to achieve the required base dimension or other means used to guy or brace the unit against tipping.*

- Is the minimum step width for ladder stands/platforms 16 inches?

- Are the steps of ladder stands/platforms fabricated from slip-resistant treads?

- Are at least two of the four casters equipped with a swivel lock to prevent movement?

- Are steps of mobile ladder stands/platforms uniformly spaced?

- Are steps of mobile ladder stands/platforms sloped, with a rise that is not less than 9 and not more than 10 inches, and a depth of at least 7 inches?

NOTE: *The slope of the steps section shall be a minimum of 55 degrees and a maximum of 60 degrees measured from the horizontal.*

- Are mobile ladder stands/platforms with more than five steps equipped with handrails?
- Are the handrails at least 29 inches high?

NOTE: *Measurements must be taken vertically from the center of the steps.*

- Are all ladder stands/platforms with a work level 10 feet or higher above the ground or floor equipped with a standard (4-inch nominal) toeboard?

4.4 Disposition

1. IF ladder/platform is acceptable upon inspection, THEN:

- For portable ladders and mobile ladder stands, APPLY signed and dated, PURPLE color-coded verification sticker/tape, in a conspicuous location of each ladder that successfully passes inspection, (at approximate eye level if possible), that includes at the minimum, the name of the inspector, expiration date of inspection (one year from date of inspection), manufacturer name, and stand/platform model number, as applicable.
- For fixed ladders, apply dated brass tags in a conspicuous location of each ladder that successfully passes inspection, (at approximate eye level if possible), that includes the date of inspection, and ladder location or unique ladder identifier, as applicable.

NOTE: *brass tags on ladders in pits and holes shall be placed so the tag is visible from where one stands prior to first accessing the ladder.*

- IF there are other ladders to inspect, THEN
  PROCEED to next ladder and PERFORM 4.1, 4.2 or 4.3, as applicable.

2. IF ladder is unacceptable, THEN PERFORM section 4.5.

4.5 Adjustments, Repairs and/or Tag Out

1. PERFORM minor adjustments/repairs, such as tightening, filing, or cleaning, THEN LIST on the Work Record, the ladder/platform number and/or location and type of adjustment/repair performed.

2. IF adjustments/repairs are acceptable, THEN:

- DOCUMENT Status and Date Repair Made on the Work Record, and RETURN to inspection step where problem was discovered.
- • PROCEED to next ladder/platform and PERFORM section 4.1, 4.2 or 4.3. as applicable.

1. IF minor repairs, as described in step 4.5.1 cannot be made during the inspection, THEN NOTIFY the Field Work Supervisor and TAG the ladder "Out of Service" per HMIS-PRO-23749, *Miscellaneous Facility Tags*.

   - LOCATE tag on ladder per one of the following:

     1) TIE WIRE OR FASTEN tag in a conspicuous location.

     2) LOCATE tag at bottom of ladder if the only way to access the ladder is from the bottom.

     3) LOCATE tag at top of ladder if the only way to access the ladder is from the top.

     4) LOCATE tags at top and bottom of ladder if alternate access paths are available.

2. IF repairs required are beyond the scope of these instructions, THEN LIST the ladder number or location and NOTE problem(s) on the Work Record.

3. Field Work Supervisor PREPARE (IF NEEDED) a work document for repairs listing the ladder number(s) or location(s) and the repair(s) needed, THEN PROCEED to next ladder and PERFORM section 4.1, 4.2 or 4.3 as applicable.

Appendix B. Definitions

Cage	An enclosure mounted on the side rails of a fixed ladder or fastened to a structure behind the fixed ladder that is designed to surround the climbing space of the ladder. A cage also is called a ``cage guard" or ``basket guard."
Carrier	The track of a ladder safety system that consists of a flexible cable or rigid rail attached to the fixed ladder or immediately adjacent to it.
Combination ladder	A portable ladder that can be used as a stepladder, extension ladder, trestle ladder, or stairway ladder. The components of a combination ladder also may be used separately as a single ladder.
Extension ladder	A non-self-supporting portable ladder that is adjustable in length.
Fixed ladder	A ladder with rails or individual rungs that is permanently attached to a structure, building, or equipment. Fixed ladders include individual-rung ladders, but not step bolts or manhole steps.
Grab bar	An individual horizontal or vertical handhold installed to provide access above the height of the ladder.
Handrail	A rail used to provide employees with a handhold for support.
Individual-rung ladder	A ladder that has rungs individually attached to a building or structure. An individual-rung ladder does not include manhole steps.
Ladder	A device with rungs, steps, or cleats used to gain access to a different elevation.
Ladder safety system	A system designed to eliminate or reduce the possibility of falling from a ladder. A ladder safety system usually consists of a carrier, safety sleeve, lanyard, connectors, and body harness. Cages and wells are not ladder safety systems.
Lower levels	Those areas to which an employee can fall from a stairway or ladder. Such areas include ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, material, water, equipment, and similar surfaces. It does not include the surface from which the employee falls.
Manhole steps	Steps that are individually attached to, or set into, the wall of a manhole structure.
Maximum intended load	The total load (weight and force) of all employees, equipment, vehicles, tools, materials, and other loads the employer reasonably anticipates to be applied to a ladder at any one time.
Mobile	Manually propelled or moveable.
Mobile ladder stand (ladder stand)	A mobile, fixed-height, self-supporting ladder that usually consists of wheels or casters on a rigid base and steps leading to a top step. A mobile ladder stand also may have handrails and is designed for use by one employee at a time.

Mobile ladder stand platform	A mobile, fixed-height, self-supporting unit having one or more standing platforms that are provided with means of access or egress.
Portable ladder	A ladder that can readily be moved or carried, and usually consists of side rails joined at intervals by steps, rungs, or cleats.
Rung, step, or cleat	The cross-piece of a ladder on which an employee steps to climb up and down.
Side-step ladder	A type of fixed ladder that requires an employee to step sideways from it in order to reach a walking-working surface, such as a landing.
Step bolt (pole step)	A bolt or rung attached at intervals along a structural member used for foot placement and as a handhold when climbing or standing.
Stepladder	A self-supporting, portable ladder that has a fixed height, flat steps, and a hinged back.
Stepstool	A self-supporting, portable ladder that has flat steps and side rails. For purposes of the final rule, stepstool includes only those ladders that have a fixed height, do not have a pail shelf, and do not exceed 32 inches (81 cm) in overall height to the top cap, although side rails may extend above the top cap. A stepstool is designed so an employee can climb and stand on all of the steps and the top cap.
Through ladder	A type of fixed ladder that allows the employee to step through the side rails at the top of the ladder to reach a walking-working surface, such as a landing.
Tieback	An attachment between an anchorage (e.g., structural member) and a supporting device (e.g., parapet clamp or cornice hook).
Well	A permanent, complete enclosure around a fixed ladder.