

# Hanford Site Fall Protection Program (HSFPP)

Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management



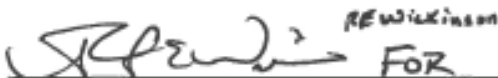
U.S. DEPARTMENT OF  
**ENERGY**

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Hanford Site Fall Protection Program (HSFPP)

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 <sup>RE: Wilkinson</sup>  
FOR  
\_\_\_\_\_  
Bill Johnson, President & General Manager  
Mission Support Alliance, LLC

4/11/17  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Ty Blackford, President & Chief Executive  
Officer  
CH2M HILL Plateau Remediation Company

4/19/17  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Mark A. Lindholm, President & Project  
Manager  
Washington River Protection Solutions, LLC

4/11/17  
\_\_\_\_\_  
Date

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**REV. 2-4 CHANGE SUMMARY**

Revision #	Section Changed	Change Details
2-4	3.7	Clarified language per Change Form CHG-0346-009 about how steep an excavation slope needs to be to require fall protection.
2-4	4.1 and 4.1.2	Clarify and correct language per Change Form CHG-0346-007 regarding guard rail gap spacing.
2-4	4.8	Specified per Change Form CHG-0346-008 who is responsible to verify and document a hole cover's capability to support twice the weight imposed on it.

**REV. 2-3 CHANGE SUMMARY**

Revision #	Section Changed	Change Details
2-3	3.7	Removed note just prior to Section 3.7. Revised language in Section 3.7 clarifying fall protection requirements when working near excavations. Added new subsections 3.7.1 and 3.7.2. All changes were per Change Form CHG-0346-005.

**REV. 2-2 CHANGE SUMMARY**

Revision #	Section Changed	Change Details
2-2	1.0	Deleted first bullet exemption for Electrical Utilities, per Change Form DOE-0346-04..
2-2	3.0	Added paragraph below current paragraph for construction utilities, delineating the requirement for EU's participation in the program as required by 29 CFR 1910.269, per Change Form DOE-0346-04.

**REV. 2-1 CHANGE SUMMARY**

Revision #	Section Changed	Change Details
2-1	4.4	Changed wording to apply positioning devices to both construction and general industry, per Resolution Form DOE-0346-03.
2-1	4.11	Changed wording to omit the exception of aerial lifts in the first sentence, per Resolution Form DOE-0346-02.
2-1	4.11	Changed wording regarding mobile equipment used as anchorages to specify what types of equipment may be used under what conditions, per Resolution Form DOE-0346-01.

**REV. 2 CHANGE SUMMARY**

Revision #	Section Changed	Change Details
2	General	Minor editorial changes in punctuation, grammar and tense usage were made to improve readability.
2	General	Substantive changes in this revision were driven by the publication of the updated 29 CFR 1910 Subpart D.
2	General	Moved Definitions to Appendix A as per style guide. The Definitions used to be Section 2.0, so this moved changed section numbering starting at 2.0 through the end, as well as the appendix order.
2	1.0	Bullet about fixed and portable ladders changed from 20 feet to 24 feet.
2	2.7	Added requirement that Qualified Person is required to provide training to each Authorized User.
2	2.10	Moved specific duties to Appendix D to consolidate and clarify.
2	3.0	Added and updated language based on 1910.28(b)(1).
2	3.1	Added list of approved fall protection systems.
2	3.3	Add a subsection about grab handles based on 1910.28(b)(2)(ii) and 1910.29(1).
2	3.4	Revised floor openings and holes section based on 1910.28(b)(14), 1910.28(b)(3), and 1910.28(b)(5).
2	3.6	Added new paragraph to ramps section based on 1910.28(b)(5).
2	3.8	Revised based on 1926.501(b)(8) and 1910.28(b)(6).
2	3.13	Added designated area and non-conforming guardrails.

Revision #	Section Changed	Change Details
2	3.17	Changed elevation from 20 feet to 24 feet.
2	3.21	Added section about repair, service, and assembly pits less than 10 feet in depth based on 1910.28(b)(8).
2	3.22	Added section about dockboards as per 1910.29(b)(4).
2	4.1	Added deflection paragraph based on 1910.29(b)(3) and 1926.502(b)(4). At the end of this section, added statement about prohibited materials for top and mid-rails.
2	4.2	Add requirements for PFAS pre-sternal point attachment as per 1910.140.(c)(22). Removed prohibition for PFAS use in a hoist area.
2	4.2	Deleted section about PFAS not being allowed in hoist area because it was in conflict with earlier direction from 1910.29(b)(2)(ii) and 1926.501(b)(3), as well as Section 4.3.
2	4.3	Specified 3,000 pounds (Construction) and 5,000 pounds (General Industry) as per 1910.140(c)(13).
2	4.4	Specified 3,000 pounds (Construction) and 5,000 pounds (General Industry) as per 1910.140(c)(13).
2	4.8	Updated discussion of covers as per 1910.29(e)(4), which no longer differentiates between temporary and permanent covers. Added note regarding manhole covers or steel grates on roadways.
2	4.11	Updated discussion to reflect 3,000 pounds (Construction) and 5,000 pounds (General Industry) specification from 1910.140(c)(13).
2	4.13	Added requirement for employees to remain within designated area while work operations are underway as per 1910.29(d)(1)(i). Replaced text of section with new language from 1910.29(d).
2	7.0	Added requirement for training to be understandable to each employee as per 1910.30(d).
2	10.0	Updated reference list.
2	11.0	Added forms section for clarity.
2		Added definitions for: <i>Dockboards</i> <i>Hoist Area</i> <i>Mobile</i> <i>Personal Fall Arrest System</i> <i>Platform</i> <i>Ramp</i> <i>Runway</i> <i>Safety Factor</i>

Revision #	Section Changed	Change Details
		Modified definitions for: <i>Personal Fall Restraint System</i> <i>Walking-Working Surface (to include language from both Subpart D 1910 and 1926)</i>
		Deleted definitions for: <i>Floor openings</i> <i>Travel Restraint System</i>
2	Acronym List	Added Controlled Access Zone (CAZ)
1A	General	Minor editorial changes in punctuation, grammar and tense usage were made to improve readability.
1A	1.0	Deleted four paragraphs of duplicate requirements from this section.
1A	1.0	Added an exception for access and egress for clarification.
1A	1.0	Added the use of a new form for exceptions A-6006-584 to the end of the last paragraph with language approved by SMT.
1A	1.0	Moved the paragraphs on Hierarchy of controls to Section 4.0 Requirements.
1A	2.0	Fall Hazard definition was changed, by removing the scaffolding exclusion.
1A	2.0	Deleted Floor Holes, it was not used in the document and has been eliminated by OSHA.
1A	4.0	Added hierarchy of controls to the beginning of the section.
1A	4.0	Fourth (4 <sup>th</sup> ) paragraph was change. Using competent personnel was removed to eliminate confusion and additional examples were inserted to better clarify the intent.
1A	4.0	Sixth (6 <sup>th</sup> ) paragraph was clarified.
1A	4.0	Added last paragraph to clarify the use of Administrative Controls.
1A	4.4	Title changed to better reflect the content of the paragraph. Changes were made to the paragraphs to eliminate confusion.
1A	4.10	Language was changed to provide better understanding. The exception paragraph was deleted.
1A	4.15	Language was added to the end of the last paragraph to clearly state the OSHA requirement.
1A	4.17	Reference was changed to reflect the change in location of requirements.
1A	5.14	Examples were removed.
1A	6.0	Language was changed in the first bullet to better define use the FPWP.



Revision #	Section Changed	Change Details
1A	6.0	Deleted 5 <sup>th</sup> & 6 <sup>th</sup> paragraphs because they were redundant.
1A	6.0	The bulleted lists for use of an FPWP in a CAZ were realigned to better reflect the hierarchy of use.
1A	11.0	The new form (A-6006-584) was added to the list.
1	General	Put document into current I&SWSS procedure format.
1	1.0	Section changed to conform with direction from DOE-RL/ORP. Exceptions revised. Added Hierarchy of controls with Note.
1	2.0	Added/Changed Definitions for: <i>Administrative Controls</i> <i>Barricade</i> <i>Barrier</i> <i>Competent Engineer</i> <i>Conventional Fall Protection System</i> <i>Non-conforming guardrail</i> <i>Work Control Document</i> <i>Floor Hole</i> <i>Fall Hazard</i> <i>Fall Protection Spotter</i> <i>Fall Protection Work Permit: Safety Representative</i>  Deleted definition for: <i>Non-certified Anchorage</i>
1	3.0	Added/Changed Roles and Responsibilities for: Competent Engineer Safety Monitor
1	4.0	Preamble added.
1	4.4	Language changed to allow for controls to be documented in the FPWP.
1	4.6	Note added.
1	4.7	Section expanded for clarity.
1	4.9.1	Added verbiage to clarify roof access requirements.
1	4.9.2	Details about warning lines moved to Section 5.5.
1	4.10	Section Added to address "Slightly Sloped Roof." Following sections were renumbered to align within document.
1	4.16	Added reference and clarification.

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Revision #	Section Changed	Change Details
1	4.17	Ladder requirement clarified.
1	5.1	Added requirements in 4 <sup>th</sup> paragraph.
1	5.2	Note added. Added language about inspection and care of equipment.
1	5.3	Deleted and added to Section 5.2.
1	5.5	Section covers Warning Lines. Subsequent sections renumbered to align with addition.
1	5.6	Section addresses Non-Conforming Guardrails. Warning line information was moved to Section 5.5.
1	5.7	Section expanded for clarity.
1	5.8	Information on covers expanded to aid in use and understanding.
1	5.9	Reformatted to ease readability and understanding.
1	5.10	Last bullet was added Horizontal Lifelines.
1	5.11	Realigned section to ease reading and added language on Mobile equipment used as anchorage.
1	5.12	Allows connectors certified by NRTL.
1	5.14	New section: Administrative Controls added.
1	6.0	Limited the use of the FPWP to one year. Paragraph on Qualified Person involvement added. Clarifying language added.
1	8.0	Realigned.
1	9.0	Language removed in preamble to better conform to OSHA requirement.
1	10.1	Requirement for evaluation at 12 months removed.
1	11.0	New references added.
1	Appendix A	Title changed. Due to the inability to verify data previously contained in this appendix the tables were deleted.
1	Appendix D	Roof Access added.
1	Appendix E	Acronym List added.



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## 1.0 PURPOSE AND SCOPE

The requirements of the Hanford Site Fall Protection Program (HSFPP), herein called the Program, apply to all work activities at height or above dangerous equipment. The requirements of the Program are based primarily on Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1926, Subpart M, *Fall Protection*, and 29 CFR 1910, Subpart D, *Walking-Working Surfaces*, and American National Standards Institute (ANSI)/American Society of Safety Engineers (ASSE) Z359, *Fall Protection Code*.

Exceptions to the Program are as follows:

- Telecommunications (while performing work under 29 CFR 1910.268, *Telecommunications*).
- Hanford Patrol, where activities fall outside the scope described in 29 CFR 1926.500 (a)(1), *Scope, Application, and Definitions Applicable to This Subpart*, and 29 CFR 1910.21, *Scope and Definitions*, when it is determined by a Qualified Person that compliance is infeasible or creates a greater hazard to use conventional fall protection equipment. In these cases, Hanford Patrol shall implement the Fall Protection Work Permit (FPWP) that provides comparable protection to this Program.
- Hanford Fire Department (HFD) emergency responders, when they are equipped with their own protective equipment and devices when training or effecting emergency response and/or emergency rescue/retrieval activities.
- Use of fixed and portable ladders for access under 24 feet.
- Access and egress to and from vehicle operating stations or to perform operational checks, using an access method provided by the manufacturer.

Personnel are not required to use fall protection while performing inspections, investigations, and assessments of working conditions prior to the actual start of work activities or after all work activities have been completed, per 29 CFR 1926.500(a)(1), *Scope, Application, and Definitions Applicable to This Subpart*, and 1910.28(a)(2)(ii), *Duty to have Fall Protection and Falling Object Protection*. This exception may only be granted if the task is of a short duration and shall not be used while any other work is taking place at the same time and location, and fall protection systems or equipment meeting the requirements of Section 4.0, *Fall Protection Systems, Criteria, and Practices*, have not been installed and are not available for workers to use for pre-work and post-work inspections, investigations, or assessments. The Prime Contractor Cognizant Safety Manager shall approve the use of this exception and document it per form *Hanford Site Fall Protection Program – Exception Approval* (A-6006-584).

## 2.0 ROLES AND RESPONSIBILITIES

### 2.1 Project/Facility Director

- Ensures resources are available to implement the Program
- Ensures line management and project employees are trained to comply with and implement the Program

### 2.2 Project Manager

- Verifies line management has been trained to implement the Program
- Ensures proper equipment is available

### 2.3 Prime Contractor's Cognizant Safety Manager

- Approves exceptions to 29 CFR 1926.500(a)(1), *Scope, Application, and Definitions Applicable to This Subpart*, or 29 CFR 1910.28(a)(2)(ii), *Duty to Have Fall Protection and Falling Object Protection*, where the people doing inspections, investigations, and assessments of conditions are not required to use fall protection
- Approves the FPWP

### 2.4 Cognizant Supervisor

- Verifies employees are trained to comply with and implement the Program
- Ensures completion of initial evaluation of work locations where unprotected fall hazards exist, to address and resolve specific fall protection issues
- Ensures Fall Protection Spotter(s) and/or Fall Protection Safety Monitor(s) are designated, when required
- Develops/reviews the FPWP with the Safety Representative, Qualified Person (when required), Competent Person, and an Authorized User
- Ensures performance of semi-annual inspections of all fall protection equipment based on the equipment manufacturer's requirements
- Ensures the FPWP is in the work control documents and reviewed with the Authorized User(s)
- Ensures Structural Roof Analysis has been completed in accordance with Prime Contractor's policy
- Assigns the Fall Protection Competent Person(s) and Qualified Person(s) to the planned work

### 2.5 Competent Engineer

- Performs analysis on the design basis, prior roof inspections, and other justification for authorizing the *Roof Access Letter of Authorization*, provided there is no current roof assessment

- Writes and signs *Roof Access Letter of Authorization*
- Re-evaluates roof condition in accordance with Appendix E, *Roof Access*

## 2.6 Competent Person

- Performs periodic inspections of ongoing work to ensure compliance with the Program
- Provides technical expertise to line management to ensure compliance with the Program
- Performs initial evaluation of work locations where unprotected fall hazards exist
- Develops/reviews the FPWP with the Cognizant Supervisor, the Qualified Person (when required), Authorized User, and Safety Representative.
- Ensures that the Qualified Person is involved in development of the FPWP when required
- Provides recommendations to the Cognizant Supervisor regarding the type of fall protection required to protect employees who have the potential to be exposed to a fall
- Verifies that fall protection systems are installed in accordance with the requirements of this Program
- Selects and supervises the installation of non-certified anchorages
- Conducts semi-annual inspection of fall protection equipment, to include removing defective components from service and rendering them inoperable
- Fulfills the role of Safety Monitor

## 2.7 Qualified Person

- Provides structural analysis, documentation, and approval for certified anchorages used for fall arrest, restraint, and positioning systems, including lanyards and devices
- Designs and provides direction for the installation and use of horizontal lifelines  
**NOTE:** *Direction means instruction or guidance for making, using, etc.*
- Develops/reviews the FPWP, when required, with the Cognizant Supervisor, Competent Person, Safety Representative, and an Authorized User
- Provides training to each Authorized User

## 2.8 Authorized User

- Completes initial and requalification fall protection/fall prevention training
- Inspects Personal Fall Restraint Systems (PFRS) and Personal Fall Arrest Systems (PFAS) prior to use

- Performs work in compliance with the Program
- Develops/reviews the FPWP, when required, with the Cognizant Supervisor, Competent Person, Safety Representative, and Qualified Person (when required)
- Reports conditions that were not addressed on the FPWP
- Complies promptly with fall hazard warnings from the Safety Monitor and/or Fall Protection Spotter, when present

### 2.9 Safety Monitor

- Must be a Competent Person
- Completes appropriate training in recognition of fall hazards
- Provides continuous monitoring of employees who are exposed to a fall hazard
- Remains within visual sighting distance of monitored employees
- Remains close enough to communicate with employees
- Takes prompt corrective measures to have the Authorized Users move away from the unprotected side or edge or use other work processes to avoid hazards
- Does not allow other responsibilities or distractions to interfere with monitoring activities

### 2.10 Fall Protection Spotter

- Complies with all requirements contained in Appendix D, *Fall Protection Spotter [Non-Mandatory]*

## 3.0 REQUIREMENTS

To ensure employees are not inadvertently exposed to fall hazards, each work area and process shall be evaluated to ensure controls are in place to prevent exposure to fall hazards. Engineered systems (e.g., guardrails, approved work platforms, scaffolds, or vehicle-mounted elevated work platforms) shall be used wherever possible to eliminate potential fall exposure.

The Fall Protection Methods used shall be based on a hierarchy of controls as discussed in ANSI Z359.2, *Minimum Requirements for a Comprehensive Managed Fall Protection Program*, in the following order:

1. Elimination
2. Engineering Controls
3. Personal Protective Equipment
4. Administrative Controls

**NOTE:** *The preceding hierarchy or preferred order of control shall be used to choose methods to eliminate or control fall hazards. The fall protection hierarchy shall be*



*considered when designing fall protection solutions for both existing and new facilities. The methods listed above are in decreasing order of preference.*

For General Industry activities, fall protection is required when employees are exposed to a fall from 4 feet or more to a lower level, any height above dangerous equipment, or as specified within this Program.

For Construction activities, including demolition, fall protection is required when employees are exposed to a fall from 6 feet or more to a lower level, any height above dangerous equipment, or as specified within this Program.

Electrical Utilities (EU) employees climbing or changing location on poles, towers, or similar structures must use fall protection equipment unless the EU Management can demonstrate that climbing or changing location with fall protection is infeasible or creates a greater hazard than climbing or changing location without it as described in 29 CFR 1910.269 (g) (2) (iv) (C) (3).

When employees are exposed to a fall hazard, as defined in this Program, an FPWP is required.

Administrative controls may be used when the other indicated methods of fall protection are infeasible or create a greater hazard to implement.

### **3.1 Unprotected Walking-Working Surfaces**

Employees on a walking-working surface (horizontal or vertical) with an unprotected side or edge that exposes an employee to a fall hazard (except surfaces otherwise addressed in Section 3.2 - 3.21) shall be protected from falling by the use of:

- Guardrail systems
- PFRS
- PFAS
- Non-conforming guardrails (Construction only)

### **3.2 Leading Edge Work**

Employees who are constructing a leading edge 6 feet or more above lower levels shall be protected from falling by a guardrail system, PFRS, or PFAS. If a guardrail system, PFRS, or PFAS cannot be used, then a Controlled Access Zone (CAZ) with a Safety Monitor shall be used when no alternative measure has been implemented.

Employees on a walking-working surface where leading edges are under construction, but who are not engaged in the leading-edge work, shall be protected from falling by a guardrail system, PFRS, or PFAS. If a guardrail system is chosen to provide the fall protection, and a CAZ has already been established for leading-edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

Individuals who are not performing leading-edge work are not allowed in the CAZ.

### 3.3 Hoist Areas

Employees in a hoist area where they are exposed to a fall hazard shall be protected from falling to lower levels by a guardrail system, PFRS, or PFAS.

If guardrail systems, or portions thereof, are removed to facilitate a hoisting operation (i.e., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening, the employee shall be protected from fall hazards by a PFRS or PFAS. The system shall be defined in the FPWP.

#### 3.3.1 Grab Handles

If grab handles are installed, they must meet the following requirements: Each grab handle must be no less than 12 inches in length, be mounted to give at least 3 inches of clearance from the framing or opening, and be capable of withstanding a maximum horizontal pull-out force equal to two times the intended load or 200 pounds, whichever is greater.

### 3.4 Holes

#### 3.4.1 General

The employer must ensure that:

- Each employee is protected from falling into a stairway floor hole by a fixed guardrail system on all exposed sides, except at the stairway entrance. However, for any stairway used less than once per day where traffic across the stairway floor hole prevents the use of a fixed guardrail system (e.g., holes located in aisle spaces), the employer may protect employees from falling into the hole by using a hinged floor hole cover that meets the criteria in Section 4.8, *Covers and Protection for Holes and Floors, Roofs, and Other Walking-Working Surfaces*, and a removable guardrail system on all exposed sides, except at the entrance to the stairway.
- Each employee is protected from falling into a ladderway floor hole or ladderway platform hole by a guardrail system and toeboards erected on all exposed sides, except at the entrance to the hole, where a self-closing gate or an offset must be used.
- Each employee is protected from falling through a hatchway and chute-floor hole by:
  - A hinged floor-hole cover that meets the criteria in Section 4.8, *Covers and Protection for Holes and Floors, Roofs, and Other Walking-Working Surfaces*, and a fixed guardrail system that leaves only one exposed side. When the hole is not in use, the employer must ensure the cover is closed or a removable guardrail system is provided on the exposed sides;

- A removable guardrail system and toeboards on not more than two sides of the hole, and a fixed guardrail system on all other exposed sides. The employer must ensure the removable guardrail system is kept in place when the hole is not in use; or
- A guardrail system or a PFRS when a work operation necessitates passing material through a hatchway or chute floor hole.

### 3.4.2 Other Holes

Employees on walking-working surfaces exposed to fall hazards shall be protected from falling through floor holes greater than 12 inches in their least dimension (including skylights, hatches, trap doors, hinged covers, etc.) as outlined in the FPWP. Acceptable forms of protection include covers (preferred where feasible), guardrail systems, PFRS, or PFAS.

Each employee on a walking-working surface shall be protected from tripping in or stepping into or through holes 2 inches or greater by covers or guardrail systems.

Each employee on a walking-working surface shall be protected from objects falling through holes 2 inches or greater by covers or guardrail systems.

The preferred method of protecting open floor or roof openings, while accessing the opening, is to use a swing gate or guardrail offset system.

### 3.5 Formwork and Reinforcing Steel

Employees on the face of formwork or reinforcing steel shall be protected from falling 6 feet or more to lower levels by a positioning device system or PFAS. If a positioning device system is used that does not maintain 100% fall protection, a PFAS is also required as described in the FPWP.

### 3.6 Ramps, Runways, and Other Walkways

Employees exposed to fall hazards on ramps, runways, and other walkways shall be protected from falling by guardrail systems. Wherever tools, machine parts or objects are likely to be used on the runway, a toeboard must also be provided along each exposed side.

Runways used exclusively for special purposes may have the railing on one side omitted when the employer demonstrates that operating conditions necessitate such an omission, provided the employer minimizes the fall hazard by providing a runway that is at least 18 inches wide and providing employees with, and ensuring the proper use of, a PFRS or PFAS.

### 3.7 Working Near Excavations

Each employee at the edge of an excavation 6 feet or more in depth with a slope steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal) shall be protected from falling by guardrail systems, fences, barricades, or administrative controls.

Fall protection methods shall be discussed by the fall protection competent person, excavation competent person, and the project safety professional. This discussion shall be documented in the work package. Fall protection methods shall be determined by the fall protection competent person and the project safety professional.

The fall protection method used shall be documented in a FPWP.

### 3.7.1 Well, Pit, Shaft and Similar Excavations

Each employee at the edge of a well, pit, shaft, and similar excavation 6 feet or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers.

The use of a barrier system such as a non-conforming guardrail meeting the requirements of Section 4.6 may be used as a fall prevention method.

Employees working between the method of fall prevention and the fall hazard shall be protected from falling into the excavation by PFRS or PFAS.

The fall protection method used shall be documented in a FPWP.

### 3.7.2 Walkways Over Excavations

Guardrails, in accordance with Section 4.1, shall be provided on walkways over excavations that are  $\geq 30$  inches in width and 6 feet or more above lower levels where employees/equipment are required or permitted to cross.

The fall protection method used shall be documented in a FPWP.

## 3.8 Dangerous Equipment or Conditions

When personnel are working above vertical impaling objects, the impaling end shall be removed or adequately covered to eliminate the hazard.

Each employee less than 6 feet above dangerous equipment must be protected from falling into or onto the dangerous equipment by a guardrail or a PFRS, unless the equipment is covered or guarded to eliminate the hazard, as defined in the FPWP.

Employees 6 feet or more above dangerous equipment shall be protected from fall hazards by a guardrail system, PFAS, or PFRS, as defined in the FPWP.

## 3.9 Roof Access and Roofing Work

### 3.9.1 Accessing

Prior to personnel accessing any roof, verify that an analysis of the roof's structural stability/integrity has been completed, verified as current, and that any necessary protective measures have been identified and implemented.

In lieu of a valid structural stability/integrity analysis and prior to accessing any roof, excluding freight containers, at a Department of Energy (DOE) Hanford facility, a *Roof Access Letter of Authorization* shall be provided and signed by the responsible contractor's Competent Engineer. The Competent Engineer

writing the letter shall document that the roof has been evaluated as “Safe to Access as a walking-working surface.” The letter shall provide an expiration date at which time a new letter of authorization will be required to access the roof. The letter shall contain reference to the design basis, prior roof inspections, and other justification for authorizing roof access. All roof access letters of authorization shall be made available and contain the information identified in Appendix E, *Roof Access*.

### 3.9.2 Roofing Construction Work on Low-Slope Roofs

Employees engaged in roofing activities on low-slope roofs, with unprotected sides and edges 6 feet or more above lower levels, shall be protected from falling by one of the following:

- Guardrail system
- PFRS
- PFAS
- Warning line system and guardrail system
- Warning line system and PFAS
- Warning line system and safety monitoring system

On roofs 50 feet or less in width, the use of a safety monitoring system alone (i.e., without the warning line system) is permitted.

Specific fall protection steps shall be determined, described, and documented in the FPWP.

### 3.9.3 Steep Roofs

Employees on a steep roof with unprotected sides and edges that are exposed to a fall hazard shall be protected from falling by a guardrail system with toeboards, PFRS, or PFAS.

### 3.9.4 Maintenance Work on Low-Slope Roofs

Employees engaged in maintenance activities on low-slope roofs, with unprotected sides and edges 4 feet or more above lower levels, shall be protected from falling by one of the following:

- When work is performed less than 6 feet from the roof edge, the employer must ensure each employee is protected from falling by a guardrail system, PFRS, or PFAS.
- When work is performed at least 6 feet but less than 15 feet from the roof edge, the employer must ensure each employee is protected from falling by using a guardrail system, PFRS, or PFAS. If the work is both infrequent and temporary, the employer may use a designated area in place of guardrail system, PFRS, or PFAS.

- When work is performed 15 feet or more from the roof edge, the employer must protect each employee from falling by a guardrail system, PFRS, PFAS, or a designated area.

### 3.10 Precast Concrete Erection

Each employee engaged in the erection of precast concrete members (such as the erection of wall panels, columns, beams, and floor and roof "tees") and related operations, such as grouting of precast concrete members that are 6 feet or more above lower levels, shall be protected from falling by a guardrail system, PFRS, or PFAS as defined in the FPWP.

If a guardrail system, PFRS, or PFAS cannot be used, then a CAZ with a Safety Monitor shall be used when no alternative measure has been implemented.

Employees on a walking-working surface 6 feet or more above a lower level where precast concrete is being erected, but who are not engaged in the precast erection work, shall be protected from falling by a guardrail system, PFRS, or PFAS. If a guardrail system is chosen to provide the fall protection, and a CAZ has already been established for the precast concrete erection, the control line may be used in lieu of a guardrail along the edge that parallels the unprotected edge.

Individuals who are not performing precast concrete erection work are not allowed in the CAZ.

### 3.11 Overhand Brick Laying and Related Work

Each employee performing overhand bricklaying and related work 6 feet or more above lower levels shall be protected from falling by a guardrail system, PFRS, PFAS, or shall work in a CAZ.

Each employee reaching more than 10 inches below the level of the walking-working surface shall be protected from falling by a guardrail system, PFRS, or PFAS.

Fall Protection shall be defined in the FPWP.

### 3.12 Wall Openings

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening exposes them to a fall hazard and the inside bottom edge of the wall opening is less than 39 inches above the walking-working surface, shall be protected from falling by the use of a guardrail system or non-conforming guardrail system (see Section 4.6, *Non-Conforming Guardrails*), PFRS, or PFAS.

### 3.13 Aerial Lifts

When operating aerial lifts, a full-body harness shall be worn and a lanyard attached to the manufacturer-provided anchorage .

When exiting the aerial lift for access to an elevation, an FPWP shall be completed. An FPWP is not required when working from an aerial lift within the guardrails.

**NOTE:** *Scissor lifts are considered mobile scaffolding by OSHA and therefore are addressed in Section 3.15, Scaffolding.*

### 3.14 Cranes and Derricks

#### 3.14.1 Crane Suspended Personnel Lift Platform

When using a crane suspended personnel lift platform, fall protection shall be used in accordance with the DOE-RL-92-36, *Hanford Site Hoisting and Rigging Manual*. An FPWP is not required when the checklist is completed as directed in DOE-RL-92-36.

#### 3.14.2 Fall Protection While Performing Maintenance, Repair, Inspection, Assembly, and/or Disassembly of Cranes and Derricks

Personal fall arrest system components shall be used in personal fall arrest and fall restraint systems and shall conform to the criteria of this Program.

The employer shall provide and ensure the use of fall protection equipment for employees who are on a walking-working surface of a crane or derrick with an unprotected side or edge more than 6 feet above a lower level.

The following requirement applies while performing non-assembly/disassembly maintenance, repair, or inspection of mobile cranes.

- For work other than erecting, climbing, and dismantling, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking-working surface with an unprotected side or edge more than 6 feet above a lower level, except when the employee is at or near draw-works (when the equipment is running), in the cab, or on the deck.

The following requirement applies while performing assembly/disassembly of tower cranes and mobile cranes.

- For erecting, climbing, assembly/disassembly work, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking-working surface with an unprotected side or edge more than 15 feet above a lower level, except when the employee is at or near draw-works (when the equipment is running), in the cab, or on the deck.

### 3.15 Scaffolding

Scaffold erectors and dismantlers working at elevations above 10 feet shall have fall protection as described in 29 CFR 1926, Subpart L, *Safety and Health Regulations for Construction*, as well as company procedures. Fall protection shall be documented on the FPWP.

Scaffold users working at elevations above 6 feet shall be provided fall protection through the use of a guardrail, PFRS, or PFAS. Completion of the FPWP is not

required for users working from approved scaffolding unless there is an unprotected fall hazard.

The guardrail system provides fall protection for scissor lifts. The equipment shall be used in accordance with manufacturer instructions and OSHA requirements. An FPWP is not required when working from a scissor lift within the guardrails. When exiting the scissor lift, for access to an elevation, an FPWP shall be completed.

Requirements relating to fall protection for employees working on scaffolds are provided in 29 CFR 1926, Subpart L, *Safety and Health Regulations for Construction*, and company procedures.

### 3.16 Ladders

Fall Protection is required when using fixed or portable ladders for access to elevations more than 24 feet.

If working from a ladder where the user is exposed to a fall hazard, the hazard shall be analyzed and documented in the FPWP.

### 3.17 Steel Erection

Any fall exposure of 6 feet or greater shall be addressed in the FPWP.

### 3.18 Protection from Falling Objects

Employees exposed to falling objects shall wear a hard hat and be protected with one or more of the following options:

- The area to which objects could fall shall have a barrier. Unauthorized employees shall be prohibited from entering the area inside the barrier.
- Objects that may fall shall be kept far enough away from the edge of a higher level so that those objects will not go over the edge if accidentally displaced.
- When using toeboards as falling object protection, they shall be erected along the edge of the overhead walking-working surface at a distance sufficient to protect employees below. Good housekeeping shall be maintained so materials cannot build up behind the toeboards, creating a falling object hazard.
- If tools, equipment, or materials are piled higher than the top edge of a toeboard, then paneling or screening shall be erected from the walking-working surface or toeboard to the top of a guardrail system's top rail or mid-rail, at a distance sufficient to protect employees below.
- When using canopies as falling object protection, they shall be strong enough to prevent collapse and/or penetration by any objects that may fall on them.
- When using guardrail systems as falling object protection, all openings shall be small enough to prevent passage of potential falling objects.
- Material stored inside buildings shall not be placed within 6 feet of any hoist way, exposed edge, or inside floor holes, or within 10 feet of any exterior wall that does not extend above the top of the material stored.



- All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse.
- During the performance of roofing work:
  - Materials and equipment shall not be stored within 6 feet of an edge unless guardrails are erected.
  - Materials which are piled, grouped, or stacked near an edge shall be stable and self-supporting.
  - Materials shall be secured or configured to prevent shifting due to inclement weather.

### 3.19 Inclement Weather

During inclement weather conditions (e.g., snow, ice, thunderstorms, lightning, wind), elevated work that requires the use of a fall protection system shall be evaluated by a Competent Person or stopped due to increased overall hazard potential. Work cannot be restarted without the approval of the Prime Contractor's Cognizant Safety Manager or designee.

### 3.20 Repair, Service, and Assembly Pits less than 10 Feet in Depth

Repair, service, and assembly pits less than 10 feet deep need not be protected by a fall protection system, provided that all of the following requirements are met:

- Access to any area within 6 feet of the edge of the pit is limited to trained, authorized employees.
- Floor marking in colors contrasting to that of the surrounding area are applied, or rope, wire, or chain with support stanchions meeting the requirements of Section 4.13, *Designated Areas*, or a combination of these are placed at a distance of at least 6 feet from the edge of the pit. When two or more pits in a common area are not more than 15 feet apart, the employer may comply by placing contrasting floor markings at least 6 feet from the pit edge around the entire area of the pits; and
- Readily visible caution signs are posted that meet the requirements of 29 CFR 1910.145, *Specifications for Accident Prevention Signs and Tags*, and state "Caution—Open Pit."

### 3.21 Dockboards

The employer must ensure that each employee on a dockboard is protected from falling 4 feet or more to a lower level by a guardrail system or handrails.

A guardrail system or handrails are not required when:

- Dockboards are being used solely for materials-handling operations using motorized equipment
- Employees engaged in these operations are not exposed to fall hazards greater than 10 feet

- Those employees have been trained to properly place and secure dockboards to prevent unintentional movement

## 4.0 FALL PROTECTION SYSTEMS, CRITERIA, AND PRACTICES

### 4.1 Guardrail Systems

Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches below the top edge in any outward or downward direction, at any point along the top edge. When the 200 pound test load is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches above the walking-working level.

Guardrail systems shall be surfaced to prevent injury to an employee from punctures or lacerations and to prevent snagging of clothing.

The ends of all top rails and mid-rails shall not overhang the terminal posts except where such overhang does not constitute a projection or impalement hazard.

Top rails and mid-rails shall be at least 1/4 inch nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high-visibility material.

Spacing between the top rail and mid rails of guardrail systems shall be placed at a height midway between the top edge of the guardrail system and walking-working surface. Additionally, any horizontal gap or opening between guardrails and adjacent structure(s) shall not exceed 18 inches.

Guardrail systems used at hoisting areas (such as a guardrail with an offset access, gate, or removable guardrail section) shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

Guardrail systems used at holes or openings shall be erected on all unprotected sides or edges of the hole or opening.

When an accessible hole for the passage of materials is not in use, it shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges.

Guardrail systems used around unprotected holes that are used as points of access (such as ladder ways) shall be provided with a gate or be offset so that a person cannot walk directly into the hole. Existing openings that are currently protected by chains shall have a top and mid chain. Facilities with existing openings that are used frequently (more than once a month) shall upgrade the opening to a gate or offset system.

Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge.

Using a guardrail system, or any part thereof, as a location of an anchorage, is prohibited unless the anchorage meets the requirements in Section 4.11, *Anchorage*.

Guardrails shall not be used as a walking-working surface, climbed on, or stood on.

Do not extend the upper body so that the center of gravity is beyond the guardrail system in an attempt to achieve additional reach to access the work source or area unless supplemental fall protection is used as determined in the FPWP.

Do not use manila rope, plastic rope, synthetic rope, steel banding, or plastic banding as top rails or midrails.

#### 4.1.1 Top Rails

The top edge height of top rails or equivalent guardrail system members shall be 42 inches (plus or minus 3 inches) above the walking-working level. When conditions warrant, the height of the top edge may exceed the 45 inch height and shall be specified in the FPWP.

**NOTE:** *When employees are using stilts or ladders, the height of the adjacent top rail or equivalent member shall be increased an amount equal to the height of the walking-working level.*

#### 4.1.2 Mid-rails

Mid-rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking-working level when there is no wall or parapet wall at least 21 inches high.

Mid-rails shall be installed at a height midway between the top edge of the guardrail system and the walking-working level.

Screens and mesh, when used, shall extend from the top rail to the walking-working level and along the entire opening between top rail supports.

Mid-rails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the mid-rail or other member.

Intermediate vertical members (such as balusters), when used between posts, shall be no more than 19 inches apart.

Other vertical intermediate members (such as additional mid-rails and architectural panels) shall be installed so that there are no openings in the guardrail system that are more than 19 inches wide.

#### 4.1.3 Toeboards

Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard.

Toeboards shall be a minimum of 3 1/2 inches in vertical height from their top edge to the level of the walking-working level. They shall have no more than

1/4 inch clearance above the walking-working level. They shall be solid or have openings no more than 1 inch in their greatest dimension.

#### 4.2 Personal Fall Arrest Systems (PFAS)

When stopping a fall, a PFAS shall:

- Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness.
- Be rigged so an employee cannot contact any lower level.
- Limit maximum deceleration distance an employee travels to 3 1/2 feet.
- Have sufficient strength to withstand twice the potential impact energy of an employee free-falling a distance of 6 feet, or the free-fall distance permitted by the system, whichever is less.

**NOTE:** *If utilizing a horizontal lifeline, deceleration distance does not take into consideration the sag of the lifeline.*

The use of safety belts (body belts) for fall arrest is strictly prohibited.

The attachment point of the body harness shall be located in the center of the wearer's back or chest near shoulder level, or above the wearer's head.

When the attachment point is to the chest or the pre-sternal point, the maximum free fall distance is 2 feet.

Body harnesses and components shall be used only for employee protection (as part of a PFAS or positioning device system) and not to hoist materials.

PFAS shall be used in accordance with manufacturer recommendations (e.g., not to be worn by pregnant women or minors, not to exceed maximum capacity, users with certain medical conditions, etc.).

PFAS and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee fall protection.

PFAS shall not be attached to guardrail systems or any part thereof, unless the anchorage meets the requirements in Section 4.11, *Anchorage*.

PFAS shall not be attached to hoists without being addressed in the FPWP and with the approval of the Prime Contractor's Cognizant Safety Manager.

PFAS shall be inspected:

- By users prior to each use for wear, damage, and other deterioration.
- At least semi-annually by a properly trained Competent Person following manufacturer recommendations and the inspection shall be documented.

All fall protection equipment shall be properly stored and protected from damage and degradation.

Defective components shall be rendered inoperable and removed from service by the Competent Person.

PFAS components shall meet the requirements of 29 CFR 1926.502(d) and (e), *Fall Protection Systems Criteria and Practices*, or 29 CFR 1910.140(c), *Personal Fall Protection Systems*.

#### 4.3 Personal Fall Restraint Systems (PFRS)

PFRS shall be designed so that the employee cannot access the fall hazard.

Employees working while using a PFRS shall wear a full-body harness with the restraint line secured to the D-ring located between the shoulder blades or at the center of the chest.

A self-retracting lanyard (SRL) shall not be used for fall restraint unless the SRL is shorter than the distance to the fall hazard.

Anchorage selected for PFRS shall be capable of sustaining loads applied in the direction permitted by the system of at least:

- 3,000 pounds (Construction) for non-certified anchorages,
- 5,000 pounds (General Industry) for non-certified anchorages, or
- Two times the foreseeable force for certified anchorages.

All fall protection equipment shall be properly stored and protected from damage and degradation.

The use of safety belts (body belts) for fall restraint is strictly prohibited.

#### 4.4 Positioning Device Systems

Positioning devices:

- Shall be rigged so an employee cannot free fall more than 2 feet.
- Shall be secured to an anchorage capable of sustaining loads applied in the direction permitted by the system of at least one of the following:
  - 3,000 pounds (Construction) for non-certified anchorages
  - 5,000 pounds (General Industry) for non-certified anchorages
  - Two times the foreseeable force for certified anchorage
- Shall be inspected prior to each use for wear, damage, and other deterioration. Defective components shall be removed from service.

While using a positioning device, when the employee is exposed to a fall 6 feet or greater, a PFAS is also required, if the positioning system does not provide 100% fall protection.

All fall protection equipment shall be properly stored and protected from damage and degradation.

The use of safety belts (body belts) as a positioning device is strictly prohibited.

#### 4.5 Warning Line Systems

Warning Lines shall only be used during low-slope roofing work, as follows:

- The warning line shall be erected around all open sides of the roof work area.
- When mechanical equipment is not being used, the warning line shall be erected no less than 6 feet from the roof edge for roofing work.
- When mechanical equipment is being used while performing low-slope roofing work only, the warning line shall be erected no less than 6 feet from the roof edge that is parallel to the direction of mechanical equipment operation, and no less than 10 feet from the roof edge that is perpendicular to the direction of mechanical equipment operation.
- Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.
- When the path to a point of access is not in use, a rope, wire, chain, or other barrier, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset so a person cannot walk directly into the work area.

Warning lines shall consist of ropes, wires, or chains and supporting stanchions erected as follows:

- The rope, wire, or chain shall be flagged at no more than 6-foot intervals with high-visibility material.
- The rope, wire, or chain shall be rigged and supported so that its lowest point (including sag) is no less than 34 inches from the walking-working surface and its highest point is no more than 39 inches from the walking-working surface.
- After being erected, with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking-working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge.
- The rope, wire, or chain shall have a minimum tensile strength of 500 pounds, and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions as prescribed in the above paragraph.
- The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

No employee shall be allowed in the work area between a roof's edge and a warning line unless the employee is performing roofing work in that area. If the employee is working in the area between a roof's edge and a warning line, the employee shall be

protected by a fall protection system. On roofs 50 feet or less in width, the use of a Safety Monitoring System alone (i.e., without the warning line system) is permitted.

Mechanical equipment on roofs shall be used or stored only in areas where employees are protected by a warning line system, guardrail system, PFRS, or PFAS.

#### 4.6 Non-Conforming Guardrails

Non-conforming guardrails can only be used during Construction activities when conventional fall protection systems have been determined to be infeasible or create a greater hazard. The determination must be documented in the FPWP.

A non-conforming guardrail system must meet all of the following requirements:

- A non-conforming guardrail 15 feet or more from the edge or hole shall consist of ropes, wires, or chains and supporting stanchions erected as follows:
  - The rope, wire, or chain shall be flagged at no more than 6-foot intervals with high-visibility material.
  - The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the walking-working surface and its highest point is no more than 39 inches from the walking-working surface.
  - After being erected, with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking-working surface, perpendicular to the non-conforming guardrail, and in the direction of the floor or platform edge.
  - The rope, wire, or chain shall have a minimum tensile strength of 500 pounds, and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions as prescribed above.
  - The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.
- When ropes, wires, or chains are not used, those hazard controls designed by a Qualified Person that provide equivalent or greater protection than those identified in the Program (e.g., ecology blocks, chain link fencing, berms) shall be documented in an FPWP.
- No work or work-related activity is to take place in the area between the non-conforming guardrail and the hole or edge, unless the employees are using another form of fall protection.
- The employer shall effectively implement a work rule prohibiting the employees from going past the non-conforming guardrail.

- If mobile equipment fails inside the area designated by the non-conforming guardrail, the operator shall exit the equipment with the assistance of a Fall Protection Spotter or as documented in the FPWP. Service personnel shall be protected.

#### 4.7 Controlled Access Zones (CAZ)

When used to control access to areas where leading edge, precast concrete erection, or overhand brick laying work are taking place, the CAZ shall be defined by a control line or any other means that restricts access. If a CAZ is established for leading edge or precast concrete erection, a Safety Monitoring System shall be required when no alternative measure has been implemented.

When control lines are used, they shall be erected no less than 6 feet or more than 25 feet from the unprotected or leading edge, except when erecting precast concrete members.

When erecting precast concrete members, the control line shall be erected no less than 6 feet or more than 60 feet, or half the length of the member being erected, whichever is less, from the leading edge.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.

The control line shall be connected on each side to a guardrail system or wall.

When used to control access to areas where overhand bricklaying and related work are taking place:

- The CAZ shall be defined by a control line erected no less than 10 feet or more than 15 feet from the working edge.
- The control line shall extend for a distance sufficient for the CAZ to enclose all employees performing overhand bricklaying and related work at the working edge and shall be approximately parallel to the working edge.
- Additional control lines shall be erected at each end to enclose the CAZ.
- Only employees engaged in overhand bricklaying or related work shall be permitted in the CAZ.

Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- Each line shall be flagged or otherwise clearly marked at no more than 6 foot intervals with high-visibility material.
- Each line shall be rigged and supported in such a way that its lowest point (including sag) is no less than 39 inches from the walking-working surface and its highest point is no more than 45 inches (50 inches when overhand bricklaying operations are being performed) from the walking-working surface.
- Each line shall have a minimum breaking strength of 200 pounds.



On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, the CAZ shall be enlarged as necessary to enclose all points of access, material handling areas, and storage areas.

On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

#### 4.8 **Covers and Protection for Holes in Floors, Roofs, and Other Walking-Working Surfaces**

All permanent covers shall be designed to meet applicable codes.

A Fall Protection Qualified Person or a Competent Engineer shall verify and document that all covers shall be capable of supporting, without failure, at least twice the weight of the intended load that may be imposed on the cover at any one time.

All temporary covers are intended to be used for 180 days or less and shall be color coded or shall be marked with the words "HOLE" or "COVER" to provide warning of the hazard. After 180 days, a permanent cover shall be designed to appropriate codes or the temporary cover must be re-verified and re-documented.

**NOTE:** *The requirement for marking or color coding of covers does not apply to cast-iron manhole covers or steel grates used on streets or roadways.*

For vehicle traffic areas, it shall be verified that covers are capable of supporting twice the maximum axle load of the largest vehicle expected to cross over it.

All covers shall be secured when installed to prevent accidental displacement by the wind, equipment, or employees.

All covers protecting holes used for pipe penetration, electrical penetrations, etc., shall remain in place until the penetration is made.

All covers protecting holes providing access to an area shall remain in place unless being used for access. Immediately after the employee(s) accesses the elevated area, the cover shall be closed.

When an alternative to a cover is desired, or additional protection is required, the following options are available:

- Guardrail Offset System
- PFRS
- PFAS
- Guardrail System
- System developed by a Qualified Person

#### 4.9 **Safety Monitoring Systems**

A Safety Monitoring System is only allowed:

- For low-slope roofing activities in conjunction with a warning line system.

- On a roof 50 feet or less in width, the use of a Safety Monitoring System alone (i.e., without the warning line system) is permitted.
- In a CAZ when no alternative measure has been implemented

The Safety Monitoring System shall meet the following requirements:

- Each employee working in a Controlled Roofing Access Zone (CRAZ) shall comply with the safety monitor's instructions.
- Each employee working in a CRAZ should always face the leading edge and should move on hands and knees when possible.

The employer shall designate a Competent Person to be the Safety Monitor.

The employer shall ensure that the Safety Monitor complies with the following requirements:

- The Safety Monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.
- The Safety Monitor shall be on the same walking-working surface and within visual sighting distance of the employee(s) being monitored.
- The Safety Monitor shall be close enough to communicate orally with the employee(s).
- The Safety Monitor shall not have other responsibilities that could take the monitor's attention from the monitoring function.
- If the Safety Monitor is required to leave the immediate vicinity, then all workers shall leave the area or an alternate designated Safety Monitor shall be assigned the duties.

Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in low-slope roofing work.

Only the employee(s) working within the safety monitoring system shall be allowed in the work area.

#### 4.10 Lifelines

All fall protection equipment shall be properly stored and protected from damage and degradation.

Personnel installing lifelines shall be protected from falls at all times by the use of aerial lifts, SRL, or other attachment points specified in the work plan or the job hazard analysis. Exceptions shall be provided in the FPWP.

Lifelines shall be inspected:

- By users prior to each use for wear, damage, and other deterioration.
- At least semi-annually by a Competent Person, and inspections shall be documented. For manufactured systems, follow manufacturer's

recommendations. For Qualified Person designed systems, inspect using the criteria defined by the Qualified Person.

Defective components shall be rendered inoperable and removed from service by the Competent Person.

#### 4.10.1 Horizontal Lifelines

- On suspended scaffolds or similar work platforms, where there are horizontal lifelines that may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions.
- Horizontal lifelines shall be designed, installed, and used in accordance with the manufacturer's instructions and under the direction of a Qualified Person as part of a complete PFAS that maintains a safety factor of at least two.
- The design of horizontal lifelines and its components shall be addressed in the FPWP.
- The design of the horizontal lifeline system should meet the requirements stated in 29 CFR 1926, Subpart M, Appendix C, *Personal Fall Arrest Systems*.

#### 4.10.2 Vertical Lifelines

- Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds, except SRL.
- When vertical lifelines are used, each employee shall be attached to a separate lifeline.
- Vertical lifelines shall be installed in accordance with the manufacturer instructions and under the direction of the Qualified Person identified in the FPWP.

**EXCEPTION:** *During the construction or demolition of elevator shafts, two employees may be attached to the same lifeline in the hoist way, provided both employees are working atop a car that is equipped with guardrails and the strength of the lifeline is 10,000 pounds (5,000 pounds per employee attached).*

#### 4.10.3 Self-Retracting Lanyards (SRL) and Lanyards

SRLs and lanyards shall meet the requirements of 29 CFR 1926.502(d) and (e), *Fall Protection Systems Criteria and Practices* or 1910.140(c), *Personal Fall Protection Systems*; ANSI Z359, *Fall Protection Code*; or a Nationally Recognized Testing Laboratory (NRTL).

#### 4.11 Anchorages

When securing a PFAS to an anchorage above shoulder level is infeasible, it shall be addressed in the FPWP.

Certified anchorages shall be designed, installed, and used as follows:

- Under the direction of a Qualified Person.
- Independent of any anchorage being used to support or suspend platforms.
- As part of a complete PFAS/PFRS that maintains a safety factor of at least two with calculations/engineering information available.
- In accordance with manufacturer recommendations.

Non-certified anchorages used for attachment of PFAS and PFRS shall be selected, installed, and used as follows:

- Selected and installed under the supervision of a Competent Person. (See Appendix B, *Considerations When Determining Typical Anchorages*).
- Installed and used independent of any anchorage being used to support or suspend platforms.
- Capable of supporting 5,000 pounds per person in a PFAS for Construction and General Industry.
- Capable of supporting 3,000 pounds per person in a PFRS for Construction applications.
- Capable of supporting 5,000 pounds per person in a PFRS for General Industry applications.
- In accordance with manufacturer recommendations.

The FPWP shall be completed to designate the allowed anchorages for fall arrest.

**NOTE:** *When post installed concrete anchor bolts are used as fall protection anchorage, they shall be either through bolts or undercut anchors. Other types of anchors such as epoxy or friction type anchors may fail and shall be avoided.*

Mobile equipment not specifically designed as a fall arrest system may only be used in fall restraint or positioning, except where allowed for mobile cranes. Elevated lift platforms shall not be used as an anchorage point for fall arrest. When mobile equipment is to be used as an anchorage for fall restraint or positioning, then the following must be met:

- An FPWP is required.
- Mobile equipment manufacturer instructions shall be followed.
- A qualified operator of the mobile equipment has verified that the vehicle has been rendered immobile and shall remain in the vicinity of the machine during its usage as an anchorage.

- When used as ground-level anchorage, all blades and buckets associated with the machine to be used shall be in their rest or stowed position prior to and during use as an anchorage.
- When used as an elevated anchorage, all non-utilized blades and buckets associated with the machine shall be in their rest or stowed position prior to and during use as an anchorage.
- The anchorage shall meet the requirements listed above.
- Repositioning of the vehicle while in use as an anchorage is not allowed.

When using a crane as an anchorage, see Appendix C, *Requirements for Using a Crane as a Fall Protection Anchorage*.

#### 4.12 Connectors

Connectors shall meet the requirements of OSHA 1926.502(d), *Fall Protection Systems Criteria and Practices*; 1910.140(c), *Personal Fall Protection Systems*; ANSI Z359, *Fall Protection Code*; or an NRTL.

#### 4.13 Designated Areas

Designated Areas as established in the FPWP can only be used for General Industry activities on low-slope roofs.

When the employer uses a designated area, the employer must ensure:

- Employees remain within the designated area while work operations are underway.
- The perimeter of the designated area is delineated with a warning line consisting of a rope, wire, tape, or chain that meets the requirements of 29 CFR 1910.29(d)(2) and (3), *Designated Areas*.

The employer must ensure each warning line:

- Has a minimum breaking strength of 200 pounds
- Is installed so its lowest point, including sag, is not less than 34 inches and not more than 39 inches above the walking-working surface
- Is supported in such a manner that pulling on one section of the line will not result in slack being taken up in adjacent sections, causing the line to fall below the limits specified in 29 CFR 1910.29(d)(2)(ii), *Designated Areas*
- Is clearly visible from a distance of 25 feet away, and anywhere within the designated area
- Is erected as close to the work area as the task permits
- Is erected not less than 6 feet from the roof edge for work that is both temporary and infrequent, or not less than 15 feet for other work

When mobile mechanical equipment is used to perform work that is both temporary and infrequent in a designated area, the employer must ensure the warning line is erected not less than 6 feet from the unprotected side or edge that is parallel to the direction in which the mechanical equipment is operated, and not less than 10 feet from the unprotected side or edge that is perpendicular to the direction in which the mechanical equipment is operated. Access to the designated area shall be accomplished by establishing a clear path formed by two lines attached to stanchions that meet the strength, height, and visibility requirements of this section.

#### 4.14 Administrative Controls

Administrative controls can include warning signs, lights, audible alarms, or other methods that warn an authorized person to avoid approaching a fall hazard. Administrative controls are distinguished from work control documents implemented for the purpose of protecting a person who is already located near the fall hazard. Work control documents implemented to protect a person who is near the fall hazard are not covered by these standards.

Alternate administrative controls that provide equivalent or greater protection when utilized shall be justified and documented in an FPWP.

### 5.0 FALL PROTECTION WORK PERMIT (FPWP)

An FPWP shall be:

- Required when
  - There is an exposure to a fall hazard unless otherwise stipulated in this Program
  - Working over dangerous equipment
  - Stipulated by a Qualified Person, the Safety Representative, or a Competent Person
  - Infeasibility has been determined
- Reviewed and signed by a team made up of the Cognizant Supervisor, the Qualified Person (when required), Competent Person, the Safety Representative, and an Authorized User.
- Approved by the Prime Contractor's Cognizant Safety Manager.
- Part of the work planning documentation.
- Signed by the Authorized Users prior to starting work.
- Reviewed daily by the Authorized Users prior to starting work.
- Documented on the approved form, *Hanford Site Fall Protection Work Permit (A-6004-286)*.
- Valid for no longer than one year from the date approved.

A Qualified Person shall be involved in the analysis of fall hazards and development of methods of mitigation when the following fall protection systems are going to be used:

- Controlled Access Zone (CAZ)
- Horizontal lifelines
- Certified Anchorages

The fall protection methods used in the FPWP shall be based on a hierarchy of controls in the following order:

1. Elimination
2. Engineering Controls
3. Personal Protective Equipment
4. Administrative Controls

If Administrative Controls are chosen, the reasons why other controls cannot be used must be fully documented in the FPWP.

If there is a fall hazard present, or a fall protection method is not addressed in the FPWP, work shall be stopped until a new FPWP is developed and approved. Field modification of the FPWP is allowed, with concurrence of the Competent Person, for changes that are not an added fall hazard or an added fall protection method except in the case of a CAZ.

When an FPWP is used for a CAZ, the following requirements shall be met:

- The FPWP shall be prepared by a Qualified Person and developed specifically for the work scope where the leading edge work or precast concrete work is being performed, and the plan must be maintained up-to-date.
- Any changes to the FPWP shall be approved by a Qualified Person and the Prime Contractor's Cognizant Safety Manager.
- A copy of the FPWP with all approved changes shall be maintained at the job site or in the work control document.
- The implementation of the FPWP controls shall be under the supervision of a Competent Person.
- The FPWP shall identify each location where conventional fall protection methods cannot be used. These locations shall then be classified as a CAZ, and the employer must comply with the criteria in this section.
- The FPWP shall document the reasons why the use of conventional fall protection systems (such as guardrail systems, PFRS, or PFAS) are infeasible or why their use would create a greater hazard.
- The FPWP must include a statement that provides the name or other method of identification for each employee who is designated to work in a CAZ. No other employees may enter a CAZ.

- The FPWP shall include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection from the conventional fall protection systems. For example, the employer shall discuss the extent to which scaffolds, ladders, or vehicle-mounted work platforms can be used to provide a safer working surface and thereby reduce the hazard of falling.
- Where no other alternative measure has been implemented, the employer shall implement a Safety Monitoring System in conformance with Section 4.9, *Safety Monitoring Systems*.

When an FPWP is used in conjunction with a non-conforming guardrail, the following shall be met:

- The FPWP shall be prepared by a Qualified Person and developed specifically for the work scope where the leading edge work or precast concrete work is being performed, and the plan must be maintained up-to-date.
- Any changes to the FPWP shall be approved by a Qualified Person and the Prime Contractor's Cognizant Safety Manager.
- A copy of the FPWP with all approved changes shall be maintained at the job site or in the work control document.
- The implementation of the FPWP controls shall be under the supervision of a Competent Person.
- The FPWP shall include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection from the conventional fall protection systems. For example, the employer shall discuss the extent to which scaffolds, ladders, or vehicle-mounted work platforms can be used to provide a safer working surface and thereby reduce the hazard of falling.
- The FPWP shall document the reasons why the use of conventional fall protection systems (such as guardrail systems, PFRS, or PFAS) are infeasible or why their use would create a greater hazard.

If an employee falls, or some other related, serious incident occurs, (e.g., a near miss), the prime contractor shall investigate the circumstances of the fall or other incident to determine if the HSFPP and/or the FPWP needs to be changed (e.g., new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incidents.

Any modifications of the FPWP shall be reviewed with the Authorized Users.

## 6.0 RESCUE

In situations where technical rescue may be necessary, the team developing the FPWP may decide to contact HFD to develop a rescue plan.



If an employee falls and is suspended from a PFAS, the HFD Rescue Team shall be notified immediately by calling landline 911 or (509) 373-0911. The rescue plan shall be addressed in the FPWP.

When possible, the employee may perform self-rescue, or co-workers may attempt rescue:

- The employee may use an engineered self-rescue process that was developed for the task.
- A qualified aerial lift operator may use the lift to retrieve a suspended employee, providing the lift is rated for the intended load.
- Only personnel trained in the use of rescue equipment and methods shall perform any other type of rescue.

HFD will direct the rescue upon arrival, if the employee is still suspended.

The employee shall be evaluated by HFD and sent for further medical attention, if necessary.

## 7.0 TRAINING

Personnel who may be exposed to a fall hazard shall receive applicable fall protection training in a manner that is understandable prior to being exposed to the fall hazard.

- At a minimum, training shall comply with 29 CFR 1926.503, *Training Requirements*; 29 CFR 1910.30, *Other Working Surfaces*; ANSI Z359.2, *Minimum Requirements for a Comprehensive Managed Fall Protection Program*; and this Program as documented in the Training Program Description.
- Training shall include testing to ensure understanding by the personnel.

Personnel shall be retrained when any of the following occur:

- There are significant changes to the fall protection training requirements.
- New fall protection equipment is utilized.
- Employee exhibits inadequacies in knowledge or in the use of fall protection equipment.
- Two years have passed since the last training.
- There is a significant change to this Program.

### 7.1 Competent Person Training

- The Competent Person for Fall Protection shall be trained in accordance with ANSI Z359.2, *Minimum Requirements for a Comprehensive Managed Fall Protection Program*.
- Contractors shall be able to produce evidence of formal training and experience for evaluation prior to work activities requiring fall protection on the Hanford Site.

## 7.2 Qualified Person Training

- The Qualified Person for Fall Protection shall be trained in accordance with ANSI Z359.2, *Minimum Requirements for a Comprehensive Managed Fall Protection Program*.
- Contractors shall be able to produce evidence of formal training and experience for evaluation prior to work activities requiring fall protection on the Hanford Site.

## 8.0 COMPETENT/QUALIFIED PERSON CRITERIA

The company shall determine and document the level of management that will designate the Competent and Qualified Persons.

### 8.1 Competent Person

The Competent Person shall have:

- Knowledge of the applicable procedures and regulations as they relate to the fall protection assignment.
- Training as it relates to the fall protection assignment.
- Experience in recognizing existing and predictable hazards, as it relates to the fall protection assignment.
- Management authorization to correct unsafe acts and conditions, as it relates to the fall protection assignment.
- The ability to exercise authority in the elimination/control of hazards, as it relates to the fall protection assignment.

### 8.2 Qualified Person

The Qualified Person shall have:

- A recognized degree, certificate, or professional standing.
- Knowledge of the applicable procedures and regulations.
- Experience in solving or resolving problems relating to the subject matter, the work, or the project.

### 8.3 Documentation

The employer shall document the evaluation process for designating Competent and Qualified Persons.

## 9.0 PROGRAM EVALUATION

### 9.1 Program Evaluation

The Mission Support Contractor (MSC) shall initiate a review of this Program by convening a review team of contractor and labor representatives to verify the Program

reflects current applicable regulations, lessons learned, consistency among contractors, and that best practices are considered (See Attachment 1, *Hanford Site Fall Protection Program Committee [HSFPP] Charter*). Program evaluations shall be conducted in accordance with the Charter by a team of contractor and labor representatives every 12 months, or when site conditions or substantial changes to standards occur.

## 9.2 Evaluating Program Implementation Effectiveness

Each Hanford Site Prime Contractor shall conduct ongoing evaluations of the workplace as necessary to ensure the Program is being effectively implemented and that it continues to be effective. The Program evaluation shall identify the strengths and deficiencies for each element of the Program, along with recommendations for improvement. This evaluation shall be documented.

Program evaluations shall occur within 12 months of the previous evaluation. Contractors may utilize sources of information from third parties or other contractors to supplement their own evaluations.

## 10.0 REQUIREMENTS/REFERENCES

10 CFR 851, *Worker Safety and Health Program*  
29 CFR 1910, Subpart D, *Walking-Working Surfaces*  
29 CFR 1910.140, *Personal Fall Protection Systems*  
29 CFR 1910.145, *Specifications for Accident Prevention Signs and Tags*  
29 CFR 1910.268, *Telecommunications*  
29 CFR 1910.269, *Electrical Power Generation, Transmission, and Distribution*  
29 CFR 1926, Subpart L, *Scaffolds*  
29 CFR 1926, Subpart M, *Fall Protection*  
29 CFR 1926 Subpart V, *Power Transmission and Distribution*  
ANSI Z359, *Fall Protection Code*  
DOE-0344, *Hanford Site Excavating, Trenching, and Shoring Procedure*  
DOE-RL-92-36, *Hanford Site Hoisting and Rigging Manual*

## 11.0 FORMS

*Fall Protection Work Permit (A-6004-286)*  
*Hanford Site Fall Protection Program – Exception Approval (A-6006-584)*

## APPENDIX A: DEFINITIONS AND ACRONYMS

## DEFINITIONS

Term	Definition
100% Fall Protection	The employee is protected at all times through the use of a fall protection system, personal fall arrest system, or personal fall restraint system as identified in the work plan or procedure.
Administrative Controls	Employer mandated safe work practices or procedures that are designed to prevent exposure to a fall by signaling or warning an authorized user to avoid approaching a fall hazard.
Aerial Lift	Aerial devices used to elevate personnel to job sites above ground, including extendable boom platforms, aerial ladders, articulating boom platforms, or a combination of any such devices. Aerial equipment may be made of metal, wood, fiberglass reinforced plastic, or other material; may be powered or manually operated; and are deemed to be aerial lifts, whether or not they are capable of rotating about a substantially vertical axis.
Anchorage	A secure point of attachment for equipment such as lifelines, lanyards, and deceleration devices.
Anchorage (certified)	An anchorage for fall arrest, positioning, restraint, or rescue systems that a Qualified Person certifies to be capable of supporting at least two times the maximum expected force as prescribed in Section 4.0, <i>Fall Protection Systems, Criteria, and Practices</i> .
Anchorage (non-certified)	An anchorage that a Competent Person can determine to be capable of supporting the predetermined anchorage forces as prescribed in Section 4.0, <i>Fall Protection Systems, Criteria, and Practices</i> .
Authorized User	A person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard.
Barricade	Physical structure that prohibits the worker from entering and/or that physically limits or hinders the worker or public from exposure to a fall hazard without the use of administrative controls.
Barrier	Any visible or physical demarcation of a potential exposure to a fall hazard.
Body Belt (safety belt)	A strap with means, both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.
Cognizant Supervisor	The person who is responsible for the execution of work and/or has the authority to release work or work control documents.
Competent Engineer	An engineer who is knowledgeable through education, experience and training of the engineering discipline, applicable regulations, standards, equipment, and systems in the area of expertise as assigned by management.

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Term	Definition
Competent Person	A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authority to take prompt corrective measures to eliminate such hazards.
Connector	A device that is used to couple (connect) parts of the personal fall arrest system or positioning device systems together. It may be an independent component of the system, such as a self-locking carabiner, or it may be an integral component of part of the system (such as a buckle or D-ring sewn into a body harness, or a self-locking snap-hook spliced or sewn to a lanyard or self-retracting lanyard).
Construction	A combination of erection, installation, assembly, demolition, or fabrication activities that create a new facility or to alter, add to, rehabilitate, dismantle, or remove an existing facility. It also includes the alteration and repair (including dredging, excavating, and painting) of buildings, structures, or other real property, as well as any construction, demolition, and excavation activities conducted as part of environmental restoration or remediation efforts.
Control Line	A physical boundary line delineating a safe area from an unguarded fall hazard in a controlled-access zone.
Controlled Access Zone (CAZ)	An area in which only overhand bricklaying, precast concrete, or leading edge work may take place without the use of guardrail systems or personal fall arrest systems.
Controlled Roofing Access Zone (CRAZ)	A controlled access zone between the warning line and the roof's edge used only during low-slope roofing work.
Conventional Fall Protection System	Consists of guardrails, personal fall arrest systems, or personal fall restraint systems.
Dangerous Equipment	Equipment, such as acid tanks, degreasing units, machinery, rotating equipment, electrical equipment, and other units, which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.
Deceleration Device	Any mechanism (such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline/lanyard) that serves to dissipate a substantial amount of energy during a fall arrest or otherwise limit the energy imposed on an employee during fall arrest.
Deceleration Distance	The additional vertical distance a falling employee travels (excluding lifeline elongation and free fall distance) before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the

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Term	Definition
	location of that attachment point after the employee comes to a full stop.
Designated Area	A distinct portion of a walking-working surface delineated by a warning line in which employees may perform work without additional fall protection.
Dockboard	A portable or fixed device for spanning the gap or compensating for the difference in level between loading platforms and transport vehicle.
Equivalent	Alternative designs, materials, or methods to protect against a hazard that the employer can demonstrate shall provide an equal or greater degree of safety for employees than the methods, materials, or designs specified in the standard.
Failure	Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
Fall Arrest	The action or event of stopping a free fall or the instant where the downward free fall has been stopped.
Fall Hazard	<p>Any location where a person is exposed to:</p> <ul style="list-style-type: none"> <li>• Construction activities with a potential fall of 6 feet or more</li> <li>• General Industry activities with a potential fall of 4 feet or more</li> <li>• A potential fall at any height above dangerous equipment</li> </ul>
Fall Protection Spotter	A designated person that monitors fall protection activities and reminds employees to use the proper fall protection as designated in the FPWP.
Fall Protection System	Any equipment, device, or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall. Fall protection includes eliminating or controlling hazards, passive fall protection, fall restraint, fall arrest, and administrative controls.
Fall Protection Work Permit (FPWP)	A documented process used by the project to determine the fall hazard prevention controls a crew/person shall use to safely perform work that has a potential fall hazard. Controls for the Fall Protection Plan as described in 29 CFR 1926.502 (k), <i>Fall Protection Systems Criteria and Practices</i> , shall be addressed in the FPWP.
Fall Restraint	The technique of securing an authorized user to an approved anchorage using a lanyard short enough to prevent the person's center of gravity from reaching the fall hazard.
Free Fall	The act of falling, before a personal fall arrest system begins to apply force to arrest the fall.
Free Fall Distance	The vertical distance traveled during a fall, measured from the onset of a fall from a walking-working surface, to the point at which the fall protection system begins to arrest the fall.

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Term	Definition
Full Body Harness	Straps that may be secured about the employee in a manner that shall distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system.
General Industry	Work activities that are not included in agriculture, construction, or maritime work. General industries are regulated by OSHA's General Industry standards, directives, and standard interpretations.
Guardrail Offset System	A guardrail system around a ladder opening, hoist opening, or other opening in a floor, roof, or guardrail with all sides guarded and the entrance offset to prevent employees from backing into the opening.
Guardrail System	A barrier erected to prevent employees from falling to lower levels.
Hoist Area	Any elevated access opening to a walking-working surface where hoisted equipment or materials are loaded or received.
Hole	A gap or void more than 2 inches in its least dimension in a floor, roof, or other walking-working surface.
Infeasible	A determination that it is impossible to perform work using a conventional fall protection system (i.e., guardrail system or personal fall arrest system), that it creates a greater hazard, or that it is technologically impossible to use any one of these systems to provide fall protection. In these situations, it is required that methods/systems equivalent to a conventional fall protection system are put in place.
Lanyard	A flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body harness to a deceleration device, lifeline, or anchorage.
Leading Edge	The edge of a floor, roof, or formwork for a floor or other walking-working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.
Lifeline	A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
Locking Snap Hook	A connecting snap hook that requires two separate forces to open the gate: one to deactivate the gate keeper and a second to depress and open the gate that automatically closes when released; used to minimize roll out or accidental disengagement.
Low-Slope Roof	A roof having a slope less than or equal to 4 in 12 inches vertical to horizontal.



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Term	Definition
Lower Level	Those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, and similar surfaces and structures, or portions thereof.
Maintenance	Work that is anticipated, routine, and done on a regularly scheduled/periodic basis to help maintain the original condition of the component.
Mechanical Equipment	All motor or human propelled, wheeled equipment used for roofing work, except wheelbarrows and mop carts.
Mobile	Manually propelled and/or movable.
Non-Conforming Guardrail	A barrier erected on a surface to warn employees that they are approaching an unprotected fall hazard, which designates where work may take place without the use of a conventional fall protection system.
Non Self-Locking Snap Hooks	Gated connectors that do not automatically self-lock (e.g., climbing carabiners).
Opening	A gap or void 30 inches high or more and 18 inches wide or more, in a wall or partition, through which employees can fall to a lower level.
Overhand Bricklaying and Related Work	The process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.
Personal Fall Arrest System (PFAS)	A system used to arrest an employee in a fall from a walking-working level. It consists of an anchorage, connector, and a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
Personal Fall Restraint System (PFRS)	A combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support intended to be used by an employee to limit travel to prevent exposure to a fall hazard. A PFRS, also known as a "travel restraint system," is used such that it does not support any portion of the employee's weight; otherwise the system would be a positioning system or a personal fall arrest system.
Platform	A walking-working surface elevated above the surrounding area.
Positioning Device System	A system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free.
Positioning System (sometimes called a Work Positioning System)	A system of equipment and connectors which, when used with its body belt or body harness, allows an employee to be supported on an elevated vertical surface, such as a wall or windowsill, and work with both hands free.

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Term	Definition
Prime Contractor's Cognizant Safety Manager:	A management representative that manages safety and health risks for the contractor that controls the facility, work scope, and task request.
Qualified Person	A person who, by possession of a recognized degree, certification, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems relating to the subject matter, the work, or the project.
Ramp	An inclined walking-working surface used to access another level.
Rope Grab	A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.
Roof	The exterior surface on the top of a building. This does not include floors or formwork which, because a building has not been completed or is being demolished, temporarily becomes the top surface of a building.
Roofing Work	The hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.
Runway	An elevated walking-working surface, such as a catwalk, a foot walk along shafting, or an elevated walkway between buildings.
Safety Factor	The ratio of the design load and the ultimate strength of the material.
Safety Monitoring System	A fall protection system in which a designated person (Safety Monitor) is responsible for recognizing and warning employees of fall hazards.
Safety Monitor	A Competent Person designated to recognize fall hazards and monitor the safety of other employees potentially exposed to a recognized fall hazard.
Safety Representative	A member of the Safety organization who provides guidance and oversight to ensure implementation of the Program requirements, including fall hazard control measures as indicated in the Fall Protection Work Permit.
Self-Locking Carabiner	A connector generally comprised of a trapezoidal or oval body with a self-locking gate or similar arrangement that may be opened to attach another object and, when released, automatically closes and locks to retain the object and is specially designed not to open accidentally during a fall.
Self-Retracting Lifeline/Lanyard (SRL)	A deceleration (braking) device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement and which, after the onset of a fall, automatically locks the drum and arrests the fall.

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Term	Definition
Steep Roof	A roof having a slope greater than 4 in 12 inches vertical to horizontal.
Toeboard	A low protective barrier that shall prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.
Unprotected Sides and Edges	Any side or edge, except at entrances to points of access, of a walking-working surface where an employee is exposed to a fall hazard where there is no wall or guardrail system at least 39 inches high.
Walking-Working Surface	Any surface, horizontal or vertical, on or through which an employee walks, works, or gains access to a workplace location. Walking-working surfaces include, but are not limited to, floors, stairs, steps, roofs, ramps, bridges, runways, aisles, step bolts, formwork and concrete reinforcing steel, vehicles, or trailers, but they do not include ladders on which employees are located in order to perform their job duties.
Warning Line System	A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail or other fall arrest systems to protect employees in the area.
Work Area	The portion of a walking-working surface where job duties are being performed.
Work Control Document	A package consisting of forms, documents, procedures, permits, work instructions, etc., as required by a work control process and utilized by workers to accomplish a defined task. For construction project work, the work order/project controlling document is the work package.

**ACRONYM LIST**

ANSI	American National Standards Institute
ASSE	American Society of Safety Engineers
CAZ	Controlled Access Zone
CFR	Code of Federal Regulations
CAZ	Controlled Access Zone
CRAZ	Controlled Roofing Access Zone
DOE	U.S. Department of Energy
FPWP	Fall Protection Work Permit
HFD	Hanford Fire Department
HGU	Hanford Guards Union
HSFPP	Hanford Site Fall Protection Program
MSC	Mission Support Contractor
NRTL	Nationally Recognized Testing Laboratory
OSHA	Occupational Safety and Health Administration
PFAS	Personal Fall Arrest System
PFRS	Personal Fall Restraint System
SRL	Self-retracting lanyard or lifeline

**APPENDIX B: CONSIDERATIONS WHEN DETERMINING  
NON-CERTIFIED ANCHORAGES**

- Consider consulting a Qualified Person.
- The anchorages selected should be primary structural members. Exclude lateral supports and bracings as anchorages.
- The entire section must be fully engaged by the anchor arrest attachment (such as a web/sling that goes over the beam, or a beam clamp that centers the load on the center of rotation of the beam). The attachment cannot add a twisting movement to the member.
- Consider existing structural loads in the assessment of potential anchorage .
- Examples of unsuitable anchorages include, but not limited to:
  - Cast iron pipe
  - Thin wall piping, such as electrical conduit or instrumentation tubing
  - Bulk masonry such as chimneys
  - Flashing material on roofs

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**APPENDIX C: REQUIREMENTS FOR USING A CRANE AS A  
FALL PROTECTION ANCHORAGE**

1. If a crane is to be used as an anchorage, then a Fall Protection Work Permit (FPWP) is required.
2. All crane manufacturer instructions shall be followed.
3. Use only a qualified crane operator, as defined in DOE-RL-92-36, *Hanford Site Hoisting and Rigging Manual*.
4. A Competent Person will verify current monthly and annual inspections of the crane.
5. The crane shall be properly positioned and the pre-hook height determined approximately 10 feet above the working surface.
6. A Qualified Person (for crane operations) shall ensure crane control parameters are established using standard crane control setup procedures.
7. Ensure no load is suspended from the crane when the personal fall arrest system is anchored to the crane/derrick's hook (or other part of the load line).
8. Ensure the anchorage is capable of sustaining a 5,000-pound load per person attached.
9. Self-retracting lanyard(s) shall be attached from the crane using suitable rigging hardware rated at a minimum 5,000 lbs nominal strength. Verify current inspection of rigging hardware if used as connection/attachment devices.
10. The crane operator shall be signaled to lower the hook to a level where the self-retracting lanyard can be attached to the crane hook. The crane hook shall then be raised back to the pre-determined height while holding "by hand" the self-retracting lanyard connection end.

**NOTE:** *A good work practice is to not attach to the body harness D-ring while raising the crane hook.*

11. The crane operator shall set all travel brakes and locks, remain at the operator's station, and may leave the crane engine running.
12. Repositioning of the attachment point (hook, boom or bridge) may be required. This shall be accomplished by moving the attachment point (hook, boom or bridge) in a slow controlled motion. The employee may either be attached (this is not a preferred method) or unattached, provided that 100% fall protection is maintained.

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**APPENDIX D: FALL PROTECTION SPOTTER (NON-MANDATORY)**

A Fall Protection Spotter is an adjunct to fall protection and is not, in itself, a form of fall protection. The Fall Protection Spotter is to support the existing fall protection used. A Fall Protection Spotter may be used any time workers are exposed to a fall. Some, but not all, activities that may use a Fall Protection Spotter are: When work is being performed in an area delineated by a warning line or control line system; when work is being performed around openings in roofs or floors; or when multiple employees are tied off and management wants someone extra to remind employees to use the prescribed fall protection. The Fall Protection Spotter shall be used when designated in the Fall Protection Work Permit (FPWP).

A Fall Protection Spotter shall have no duties other than watching the workers who are using fall protection and providing continuous monitoring of employees who could be exposed to a fall hazard. The Fall Protection Spotter must remain within visual sighting distance and close enough to communicate with monitored employees. The Fall Protection Spotter must take prompt corrective measures to have the Authorized Users move away from the unprotected side or edge or use other work processes to avoid hazards. The Fall Protection spotter shall not allow other responsibilities or distractions to interfere with monitoring activities.

If the Fall Protection Spotter is required to leave the immediate vicinity, then all workers shall leave the area, or an alternate trained Fall Protection Spotter shall be assigned the duties.

One of the training requirements for a Fall Protection Spotter is the ability to recognize the fall protection that is used for the immediate work being performed. The safety professional or the supervisor for the work may perform the training.

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### **APPENDIX E: ROOF ACCESS**

Each contractor is responsible to evaluate the facilities for which they have control. Prior to any access to a roof at a DOE Hanford facility, excluding freight containers, the following information must be verified as having been completed:

1. A *Roof Access Letter of Authorization* signed by the responsible contractor's Competent Engineer.
2. The Competent Engineer writing the letter of authorization shall state that the entire roof or portions thereof are safe as a walking-working surface for the limitations defined.
3. The letter shall provide the expiration date of the roof evaluation, at which time a new letter of authorization to access the roof will be required.
4. The letter shall contain reference to the design basis, prior roof inspections, and other justification for authorizing roof access.
5. Contractors are required to maintain record copy of all letters of authorization in a readily retrievable form and provide them when requested.
6. A Roof Access Letter will be considered valid during its complete duration and a change in contractor will not invalidate the letter.

Include the following information in the Roof Access Letter of Authorization, signed by the responsible contractor's competent engineer, as it pertains to roof access:

- Status: Safe, Unsafe, or Restricted
- Area/Building Location/Number
- Building Drawing Numbers or associated documents
- Reference previous Inspection Reports
- Date of Inspection
- Inspection Team Members
- Building Description: Structural attributes
- Structural Load Evaluations: Provide reference to calculations or justifications for loading
- Deficiency Summary: Any deficiencies noted during inspection
- Recommendations
- Limitations and Precautions
- Re-inspection Interval

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**ATTACHMENT 1: HANFORD SITE FALL PROTECTION PROGRAM  
COMMITTEE (HSFPP) CHARTER**

The Hanford Site Fall Protection Program (HSFPP) Committee is established to serve as the advisory group providing consensus direction for the consistent administration and implementation of the HSFPP, herein called the Program. The participating contractors and organizations are responsible for appointing representatives to the committee.

The DOE Richland Operations Office (RL), Office of River Protection (ORP), and affected Contractors acknowledge that a joint committee provides the best approach for implementing a consistent, effective, and compliant interpretation of requirements for the Program. The parties agree to cooperate in a teambuilding manner to ensure that the full intent of the Program is met and will be responsibly carried out by their respective organizations.

**1.0 Mission**

The mission of the HSFPP Committee is to ensure consistent and standard application of the Program to promote and maintain a safe work environment. The Committee shall achieve this consistent approach through sharing best practices, lessons learned, and matters that affect multiple contractors to foster continuous improvement.

**2.0 Committee Structure/Membership/Qualification**

The Committee shall be comprised of two primary representatives each from the following prime contractors to the DOE at Hanford:

- Mission Support Contract (MSC)
- Plateau Remediation Contract (PRC)
- River Corridor Contract (RCC)
- Tank Operations Contract (TOC)

One representative shall be the contractor's Technical Representative for the HSFPP Committee Program as determined by their contractor; the second representative shall be a Hanford Atomic Metal Trades Council (HAMTC) representative (as appointed by the HAMTC President or delegate).

In addition, one representative each from the following organizations shall be appointed to serve on the Committee:

- Central Washington Building and Construction Trades Council (CWB&CTC) (as approved by the Union President or delegate)
- HAMTC

These representatives comprise the voting membership. An alternate member shall be identified to serve during any absence of a primary representative. The alternate shall have the same authority as the primary representative.

Representatives from Volpentest HAMMER Training and Education Center (HAMMER) shall attend meetings as non-voting members to address matters pertaining to their respective areas of responsibility. An alternate member shall be identified to serve during any absence of a primary representative.

A Committee member's length of duty may be indeterminate, but rotation of representative assignments is encouraged by all parties.

A chair and co-chair shall be elected by a simple majority by the voting membership of the Committee every two years. The chair and co-chair may be reelected to their respective positions.

Meetings shall be open to others to observe and to give their organizations' impact, perspectives, and technical advice for consideration of the voting body, however, participation in consensus decisions resides solely with the Committee members described herein. The Committee has the authority to develop sub-committees and invite ad hoc participants as needed.

Representatives of RL and ORP shall be invited to participate at each meeting as non-voting attendees.

The MSC shall provide a recording secretary for the Committee. The recording secretary shall be a non-voting position that provides administrative support to the chairperson. A facilitator shall be provided by the MSC as requested by the Committee.

### **3.0 Functions of the FPPDC**

The functions of the Committee shall be:

- Assist the MSC with the maintenance of the written Program;
- Communicate and submit Program changes to RL and ORP through the MSC;
- Maintain the Committee charter and review annually;
- Review and verify that training is consistent and appropriately covers the content of the FPPDC;
- Evaluate trends in performance and recommend actions for improvement;
- Review fall protection related events, issues, and lessons learned as appropriate;
- Ensure distribution of lessons learned as necessary;
- Evaluate and recommend resolution for issues/disputes pertaining to the Program;
  - Issues shall not include any actions regarding applicable Collective Bargaining Agreements.
- Recommend topics/information for communication to the workforce; and
- Provide Program status to the Senior Management Team (SMT) and DOE management when requested.

### **4.0 Roles and Responsibilities**

#### **4.1. Chair Roles and Responsibilities**

- Schedule meetings.
- Facilitate meetings in an orderly fashion.
- Limit disruptions.
- Ensure meeting agendas are prepared.
- Ensure meeting minutes are taken and comments are documented.
- Function as a point of contact and spokesperson for the Committee.
- Interface with other site-wide safety program committees as necessary.

- Ensure action item list is maintained and members complete their assignments in a timely manner.
- Coordinate assignments of sub-committee(s).

#### **4.2.Co-Chair Roles and Responsibilities**

- Act as the Chair when the Chair is absent.
- Perform roles and responsibilities as delegated by the Chair.

#### **4.3.Member Roles and Responsibilities**

- Provide the chairperson with the identity of an alternate Committee member who is designated as the organizational representative.
- Attend and participate in meetings when scheduled or notify their alternate when unable to attend.
  - Alternates are responsible to attend and participate in meetings when the primary cannot attend.
  - If the primary and alternate are both unable to attend, the Chair shall be notified.
- Foster communication between the Committee and affected organizations relative to issue identification, interpretations, and consensus resolution.
- Work in good faith toward consensus on issues without compromising safety or Program compliance.
- Maintain a safety and requirements focus when addressing issues; avoid facility, craft, job function, or contractor biases when participating in discussions or voting.
- Maintain current knowledge of the requirements of the Program.
- Participate in issue discussions representing respective organization.
- Bring up issues or speak in discussions only after being recognized by the chairperson.
- Listen respectfully and refrain from interrupting others.
- Refrain from disruptive side conversations.

### **5.0 Meetings**

- Meet regularly as necessary, but no less than annually, via scheduled meetings.
- Hold special meetings to address urgent or emerging issues.
- MSC shall record and retain meeting minutes and action items, and distribute to the membership, alternates, and DOE.
- MSC shall document and maintain record copies of voting decisions.

### **6.0 Meeting Agenda**

- The chairperson shall ensure an agenda is prepared for each meeting, using input from the membership, and forward a copy to all members, alternates, and DOE in advance of the meeting time and date.
- Action items shall be assigned and tracked.

## **7.0 Quorum and Voting**

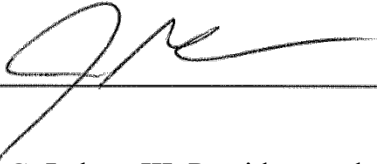
The Committee shall be considered to have a quorum when all Committee members who are eligible to vote (or their designated alternates) are present. One or more dissenting votes from the voting membership shall be cause for an issue to elevate into a secondary phase of discussion and comment.

## **8.0 Secondary Phase of Discussion and Issue Resolution**

Matters not agreed upon by the Committee through the initial voting process shall be elevated to the secondary phase of discussion. This phase may include up to two additional meetings. Further discussion/investigation beyond the two additional meetings may be conducted if there is unanimous agreement by the Committee.


If consensus cannot be reached by the Committee, the issue may be elevated to the SMT and/or DOE. The SMT shall provide a status of their resolution process to the Committee at scheduled meetings.





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John G. Lehew III, President and  
Chief Executive Officer  
CH2MHill Plateau Remediation Company




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J. Frank Armijo, President and General  
Manager Mission Support Alliance, LLC



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M.N. Brosee, President  
Washington Closure Hanford LLC




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C.G. Spencer, President  
Washington River Protection Solutions LLC



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David E. Molnaa, President  
Hanford Atomic Metal Trades Council



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David P. Davis, President  
Central Washington Building and  
Construction Trades Council