

OWNER: Safety, Systems, & Services	PPD-EH-2006	REVISION: 1
SUBJECT MATTER AREA: Occupational Safety	PREPARER: Steve Higdon	Page 1 of 71
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This document is approved for public release per review by:

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UCOR Classification Date

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REVISION LOG			
Revision	Effective Date	Description of Changes	Pages Affected
1	11/6/23	Non-intent change. Removed reference to this document replacing TWPC procedure CM-P-IS-024, <i>Fall Protection</i> , in the Revision Log for Rev. 0, as that statement was an error.	2
0	11/6/23	Initial release. CAMS Item No.: IF-2023-0066, Action 6	All

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PURPOSE

The purpose of this Program Description (PD) is to establish 100 percent fall protection compliance, ensuring all United Cleanup Oak Ridge LLC (UCOR) workers are protected through eliminating the fall hazard, use of fall prevention systems, and/or active fall protection system when a fall hazard is present. In the absence of applicable rules and/or regulations governing this type of work, the default requirement shall be six feet or greater under construction and demolition industry applications, and four feet or greater under general industry application.

This PD addresses multiple tasks including, but not limited to, working from ladders/platforms, reinforcement steel/concrete work, rigging large loads/crane assembly/crane maintenance, off-loading flatbed trailers, excavations, roofing work, scaffolding, and steep slope work.

This PD also addresses barrier and posting requirements for fall hazards that include, but are not limited to, excavations, high-walls, unprotected elevations, ladders, scaffolds, floor holes, wall openings, formwork, rebar tying, inspection of dams, working on top of vehicles, equipment, working over operating machinery, working above hazardous substances, and all other locations and operations where potential fall hazards exist.

SCOPE

This PD applies to all UCOR self-performed work and subcontractor operations.

Subcontractors should contact their Subcontractor Coordinators (SCCs)/Subcontract Technical Representatives (STRs) for assistance in understanding or complying with this PD.

UCOR’s Fall Prevention and Protection Program (FPPP) invokes precautionary measures to protect the health and safety of all workers potentially exposed to fall hazards. Implicit to this fall protection approach is the requirement that workers be protected using effective fall prevention and protection controls when working at heights in any situation that presents a foreseeable exposure to a fall hazard. Safety monitors, fall protection plans, designated areas, controlled access zones, spotters and or similar systems that do not provide a physical means of protection are the least preferred methods and not recommended.

Implementation of this PD will be conducted in conjunction with PROC-FS-1001, *Integrated Work Control Program*, which implements the Integrated Safety Management System for work performed at the activity level. Work at elevated heights is evaluated in accordance with PROC-FS-1001, this PD, and PROC-EH-2006, *Fall Prevention and Protection*.

This PD does not apply to emergency response activities (firefighting activities, protective service activities, etc.).

EXPECTATIONS AND STRATEGY

UCOR management expects UCOR workers and subcontractors will read and abide by this PD. UCOR’s most effective control strategy in implementing this PD is first to eliminate the fall hazard or second to prevent exposure to the fall hazard.

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REQUIREMENTS

The Occupational Safety and Health Administration (OSHA) General Industry Standard, 29 Code of Federal Regulations (CFR) 1910, establishes fall protection requirements for protecting workers on various walking and working surfaces. For operations and activities covered under the OSHA 29 CFR 1910, the requirements in this PD shall be applied where work is being performed at unprotected heights of four feet or more above the ground or lower level.

The OSHA Construction Standard, 29 CFR 1926, sets forth requirements and criteria for fall protection in construction workplaces. For operations and activities covered under OSHA 29 CFR 1926, the requirements in this PD shall be applied where work is being performed at unprotected heights of six feet or more above the ground or lower level.

ANSI/ASSP Z359.1, *The Fall Protection Code*, further enhances the directives set forth in OSHA and structures a managed fall protection program with specificity of roles, training, equipment selection, inspection, testing, and hierarchy of fall protection methods.

Various regulations may have provisions not noted in this PD for alternative or additional requirements for types of fall protection to be used, or methods of implementing selected fall protection. UCOR's FPPP Subject Matter Expert (SME) serves as the interpretive authority and primary point of contact for issues related to implementation of this PD, including any exemptions.

Industry best management practice, as well as a U.S. Department of Energy (DOE) expectation, per DOE 10 CFR 851, Worker Safety and Health Program, is that physical fall protection measures are used when it comes to protecting personnel when a fall hazard is present. With that said, some work could create unique situations in which this may not be feasible.

When situations/circumstances exist where passive fall protection measures (best management practice/expectation) for work above the relevant OSHA trigger elevation (four feet or six feet) cannot be achieved/performed, written controls shall be established, documented, and approved by the SME, project Safety and Health (S&H) Operations Manager or designee, Area Project Manager, and/or Qualified Person. Controls shall be documented on Form-3746, Fall Protection Plan, and Form-3747, Fall Protection Permit.

Specific orders, standards contractual requirements, programs and procedures that regulate the efficient and disciplined conduct of fall prevention and protection measures are also specified in the sections below. Consult with the Fall Prevention and Protection SME, project S&H Operations Manager or designee, and/or the Program Administrator for questions or concerns associated with effective program implementation and/or assistance with appropriate regulations and standards.

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SOURCE DOCUMENTS

A. American National Standards Institute (ANSI)/American Society of Safety Professionals (ASSP)

NOTE: A library of ANSI/ASSP documents can be found at the following link:
Q:\ESH_Programs\Shared\ANSI_ASSP_Standards

1. ANSI/ASSP A10.11 – Safety Requirements for Personal Safety Nets
2. ANSI/American Society of Safety Engineers (ASSE) A10.18 – Temporary Roof & Floor Holes, Wall Openings, Stairways Safety Requirements For, & Other Unprotected Edges in Construction & Demolition Operation
3. ANSI/ASSE A10.32 – Personal Fall Protection Used in Construction and Demolition Activities
4. ANSI/ASSP A10.24 – Roofing – Safety Requirements for Low-Sloped Roofs
5. ANSI/ASSP Z359.1 – The Fall Protection Code
6. ANSI/ASSE Z490.1 – Criteria for Accepted Practices in Safety, Health and Environmental Training
7. ANSI/ASSP 1264.1 – Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrail/Handrail Systems

B. U.S. Department of Energy (DOE)

1. Title 10 CFR Part 851, Worker Safety and Health Program

C. Occupational Safety and Health Administration (OSHA)

1. OSHA Title 29 CFR 1910, Occupational Safety and Health Standards
2. OSHA Title 29 CFR 1926, Safety and Health Regulations for Construction

D. UCOR

1. PROC-EH-2005, *Personal Protective Equipment*
2. PROC-FS-1001, *Integrated Work Control Program*
3. PROC-FO-3034, *Earth Moving Equipment Operation*
4. PROC-TC-0723, *Competent Person Designation*

OTHER DOCUMENTS NEEDED

- ANSI/ASSP A10.11 – Safety Requirements for Personal Safety Nets
- ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program
- ANSI/ASSE Z490.1, Criteria for Accepted Practices in Safety, Health and Environmental Training

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- ANSI/ASSP Z359.1, The Fall Protection Code
- ANSI/ASSP Z359.4, Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
- ANSI/ASSP Z359.6, Specifications and Design Requirements for Active Fall Protection Systems
- ANSI/ASSP Z359.11, Safety Requirements for Full Body Harnesses
- ANSI/ASSP Z359.12, Connecting Components for Personal Fall Arrest Systems
- ANSI/ASSP Z359.13, Personal Energy Absorbers and Energy Absorbing Lanyards
- ANSI/ASSP Z359.14, Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
- ANSI/ASSP Z359.15, Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
- ANSI/ASSP Z359.16, Safety Requirements for Climbing Ladder Fall Arrest Systems (CLFAS)
- ANSI/ASSP Z359.18, Safety Requirements for Anchorage Connectors for Active Fall Protective Systems
- ASTM F887, Standard Specifications for Personal Climbing Equipment
- PPD-MD-8003, *Occupational Medical Program*
- PROC-EH-2006, *Fall Prevention and Protection*
- PROC-FO-1008, *Hoisting and Rigging Operations*
- PROC-FO-1015, *Scaffolds and Ladders*
- PROC-FO-3036, *Mobile Elevating Work Platform Operation*
- PROC-OS-1001, *Records Management, Including Document Control*
- PROC-PQ-1170, *Control of Subject Matter Area Designations and Subject Matter Expert Assignments*
- PROC-TC-0702, *Training Program*
- Form-2972, Competent Person Designation Form
- Form-3745, Fall Hazard Survey
- Form-3746, Fall Protection Plan
- Form-3747, Fall Protection Permit

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ROLES & RESPONSIBILITIES, PROGRAM AND PROCESS INTERFACES

A. Fall Prevention and Protection Roles and Responsibilities

NOTE: Subcontractor Roles and Responsibilities may not align or be equivalent to identified UCOR Roles and Responsibilities. These will be determined for each specific subcontract by the UCOR FPPP SME and UCOR Subcontractor Safety Program Manager.

UCOR Safety, Systems, and Services (SSS) S&H Manager

1. UCOR SSS S&H Manager:
 - a. Owns the UCOR FPPP.
 - b. Designates the FPPP Program Administrator(s).
 - c. Designates and approves the UCOR FPPP SME.

NOTE: The UCOR Program Administrator need not be an exclusive designation. The same person may also function as a Qualified Person, Competent Person, or Trainer.

UCOR Program Administrator

2. UCOR Program Administrator:
 - a. Roles, responsibilities, and interfaces of the UCOR Program Administrator include developing implementing, monitoring, and evaluating the FPPP.
 - b. Applying current fall protection regulations, standards, and requirements of fall protection equipment and systems that are applicable to UCOR's type of work and environment.
 - c. Advising and providing guidance on all matters pertaining to the FPPP. This is accomplished by:
 - Maintaining contact with project S&H Operations Managers or their designee/supervisor to regularly evaluate site conditions and new information that might require modifications to this PD;
 - Working with the project S&H Operations Managers or designee/supervisor to confirm sufficient personal protective equipment (PPE) and other ancillary equipment are available;
 - Establishing and assigning fall protection program duties and responsibilities outlined in this PD to individuals who are trained and qualified to perform them and providing or verifying that these personnel are provided with the necessary resources to accomplish those duties and responsibilities; and
 - Ensuring this PD and PROC-EH-2006 are implemented to identify and eliminate or control new and existing fall hazards.

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NOTE: Written plans/permits should cover every fall hazard to which an Authorized Person may be exposed, but similar hazards requiring identical control measures may be grouped together. UCOR will provide the project S&H Operations Manager and/or the UCOR Program Administrator with the appropriate resources and assistance as needed to perform these responsibilities.

UCOR Program Administrator(s)

d. UCOR Program Administrator(s) shall:

- Ensure fall protection surveys/plans/permits are developed for all active fall protection systems used to control a fall hazard.
- Provide and ensure the provisions of specific training programs for personnel involved in the FPPP and verifies those personnel are provided with specific and adequate training.
- Investigate all incidents related to falls from heights. This is accomplished by reviewing incident reports, taking corrective actions to eliminate causes, preparing necessary reports to management, and by maintaining an incident reporting system.
- Monitor the effectiveness of the FPPP through the performance of periodic evaluations and any needed improvements.
- Assist in the development of approved equipment purchase list(s).
- Recommend appropriate PPE and fall protection PPE to protect Authorized Person(s).
- Conduct training or briefings, when necessary, to explain the content of this PD and site hazards to Authorized Person(s).

3. UCOR SME:

UCOR FPPP SME

- a.** Serves as UCOR's single point-of-contact and interpretive authority for the FPPP, including granting of any exemptions or exceptions.
- b.** Promotes effective implementation of the FPPP throughout UCOR functions and projects in accordance with PROC-PQ-1170, *Control of Subject Matter Area Designations and Subject Matter Expert Assignments*.

4. UCOR Chief Engineer:

UCOR Chief Engineer

- a.** Designates the Qualified Person(s) for the FPPP.

5. Facility Manager:

Facility Manager

- a.** Reviews and approves Form-3746, Fall Protection Plan.
- b.** Reviews and approves Form-3747, Fall Protection Permit.

6. Qualified Person:

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NOTE: QPs are designated by the UCOR Chief Engineer.

Qualified Person

- a.** The Qualified Person shall possess, through education, professional certification in a related field or both, have knowledge and understanding of applicable fall protection regulations, standards, equipment and systems, physical sciences, engineering principles, and mandatory requirements for fall protection equipment and systems used by UCOR.

NOTE 1: The intent is that all certified anchorages and horizontal lifelines are designed, installed, and used under the guidance of a Qualified Person. The Qualified Person does not need to be physically present whenever the systems are used or inspected; however, they are required to ensure the systems are installed and used correctly. This may involve field verification of installation and use.

NOTE 2: Roles and duties to supervise the selection, installation, use, and inspection of some types of anchorages are shared with a Competent Person. Refer to Step A.7.

Qualified Person

- b.** The Qualified Person shall:
- Supervise the design, installation, and selection of an active fall protection system. The Qualified Person is responsible to ensure the requirements of ANSI/ASSE Z359.6, Specifications and Design Requirements for Active Fall Protection Systems, are met.
 - Participate in the investigation of all incidents related to falls from heights.
 - Develop fall hazard elimination, control methods, and approves fall protection plans (Form-3746).
 - Apply engineering system standards.
 - Determine system clearance requirements.
 - Assess system component capability.
 - Participate in fall protection system assessments and determines when system(s) are unsafe.
 - Evaluate various anchorages.
 - Determine potential swing fall impact forces.
 - Evaluate various anchorages.
 - Determine potential swing fall impact forces.

NOTE: A Qualified Person may perform the duties and responsibilities of a Competent Person.

Qualified Person

- c.** The Qualified Person shall meet the qualifications of a Competent Person.

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7. Competent Person:

Competent Person

- a. The Competent Person shall be responsible for the immediate supervision, implementation of Form-3746 and has authority to take prompt corrective action. The project S&H Operations Manager and UCOR Program Administrator designate trained Competent Person(s) for UCOR.

NOTE: The Competent Person is typically a person in a position of authority such as a supervisor, lead hand, or manager who is more experienced in fall protection as it relates to the work that the authorized person performs. The Competent Person is, at times, supervising, implementing, and monitoring the requirements of this PD.

Competent Person

- b. Participates as a team member that conducts fall hazard surveys using Form-3745, Fall Hazard Survey, to identify all potential fall hazards before the Authorized Person(s) are exposed to fall hazards.
- c. Possess the authority to stop work immediately, and to take prompt corrective measures to mitigate fall hazards if it is determined that it is unsafe to proceed with the workplace activities.

NOTE: The Competent Person should consult with and obtain information from Authorized Person(s) affected by fall protection plans being written and/or reviewed. As workplace activities change, the Competent Person should determine if additional practices, plans, or training need to be implemented before workplace activities continue.

Competent Person

- d. The Competent Person shall:
- Assist in the preparation, update, and review, of a written Form-3746 and Form-3747 as directed by the UCOR Program Administrator.
 - Ensure a written rescue plan has been developed for all fall arrest systems.

Competent Person and Qualified Person

- Develop and document, in conjunction with the Qualified Person, Form-3746 and Form-3747, the selected fall protection systems, including anchorage locations, connecting means, body supports, and other fall protection equipment that Authorized Person(s) are required to use when exposed to fall hazards.

Competent Person/
UCOR Program
Administrator/
Qualified Person

- Supervise the selection, installation, use, and inspection of non-certified anchorages in consultation with the UCOR Program Administrator and Qualified Person(s).
- Verify fall protection systems have been installed and inspected in compliance with this PD, manufacturers' instructions, and applicable federal, state, and local regulations.

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NOTE: It is not intended to require a Competent Person to review fall protection plans on Form-3746 each time work begins. Frequency of the review(s) should depend on how often the work is done, its complexity, skills of the worker, and other factors. Reviews are needed to keep the Authorized Person(s) abreast of fall protection plans for the workplace activities.

Competent Person

- Verify, prior to working at heights, training for Authorized Person(s) is complete and applicable fall protection plans on Form-3746 have been reviewed.
- Verify available fall clearance is adequate before Authorized Person (s) work at height in the workplace.

NOTE: Promptness of rescue can vary depending on the Authorized Person (s) circumstances. Potential hazards identified in the fall hazard survey and specific conditions of the rescue are factors that impact how quickly the rescue may be completed.

Competent Person

- Ensure a prompt rescue of Authorized Person(s) can be performed by implementing and monitoring rescue plans.
- Participate in all incident investigations related to falls from heights.
- Immediately removes from service all personal fall protection systems and components that are damaged or impacted.
- Inspect or ensure inspection occurs for damaged equipment in accordance with a manufacturer's instructions.

NOTE: Most fall protection equipment manufacturers describe procedures, frequencies, and criteria for inspecting their fall protection equipment.

Competent Person

- Inspect annually, at a minimum, fall protection equipment and document results of those inspections as required by the manufacturer and applicable regulations.
- Confirm access controls to areas with fall hazards are effective.
- Shall be designated as the Safety Monitor per this PD.

8. Authorized Person:

Authorized Person

- a.** Shall be trained to follow PROC-EH-2006 and the instructions of the Competent Person regarding the use of active fall protection systems and equipment.
- b.** Authorized Person(s) shall:
 - Be trained on how and when to bring to the Competent Person's attention all unsafe or hazardous conditions, actions, or unsafe work practices that may cause injury to either themselves or others before proceeding with the workplace activities;

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Authorized Person

- Properly use, inspect, maintain, store, and clean fall protection equipment and systems;
- Prior to each use, inspect all fall protection equipment for defects or damage; and notify the competent person of any defect or damage; and avoid using such equipment;
- Read a copy of this PD, PROC-EH-2006 and the applicable Form-3746 and Form-3747 prior to the start of onsite work;
- Confirm fall protection training is up to date and be prepared to produce proof of training;
- Understand and use appropriate fall protection systems as required.

9. Competent Rescuer:

NOTE: Competent Rescuer duties may be fulfilled by local emergency services, in-house professionals, Competent Person(s) or Qualified Person(s) or contract services providing the UCOR Program Administrator deems that they meet the requirements of this PD.

Competent Rescuer

- a. The Competent Rescuer develops written rescue plans and methods before Authorized Person(s) start workplace activities at heights.
- b. The Competent Rescuer shall:
 - Verify all Authorized Rescuers have been adequately trained and are proficient at performing rescue;
 - Identify the resources necessary to conduct a safe and effective rescue from heights and verify those resources are available for a prompt rescue event;
 - Identify hazards associated with rescue from heights and the required procedures necessary to mitigate the hazards within the area of rescue;
 - Verify the rescue equipment is protected against damage by workplace conditions;
 - Verify the rescue section of this PD is evaluated at least annually through rescue drills;
 - Assess fall hazards to determine rescue methods;
 - Conduct a detailed inspection and record rescue equipment components and systems;
 - Perform rescue system assessments and determine when a system is unsafe;
 - Prepare and supervise the implementation of rescue plans;
 - Confirm one or more fall protection systems outlined in this PD is provided at all locations where fall hazards exist; and
 - Select non-certified rescue anchorages.

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10. Authorized Rescuer:

Authorized Rescuer

- a. Responsible to perform or assist in workplace rescues for personnel suspended in, or attached to, fall protection systems.
- b. The Authorized Rescuer shall:
 - Be trained to recognize local fall hazards that may endanger the rescuer during rescue operations, including procedures to ensure rescuer safety;

NOTE: It is recommended that the Authorized Rescuer(s) participate in the preparation of the fall protection plan (Form-3746). This is to ensure the AR carefully evaluates the circumstances and hazards associated with rescue in determining whether it is safe to perform the rescue.

Authorized Rescuer

- Verify a rescue plan has been developed for any workplace where a fall arrest system is used and shall review that procedure before fall hazards are encountered in the workplace;
- Inspect the rescue equipment prior to a rescue event; verify all rescue equipment is in working condition; and securely store the equipment until it is needed.

11. Trainers:

NOTE: Trainers must have knowledge and experience according to the training they are expected to conduct. Trainers delivering Qualified Person training are expected to have experience and training in the physical sciences, engineered systems design, and application of fall protection equipment and systems. Trainers conducting Competent Person training are expected to have experience and training in application of fall protection equipment, hazard assessment, procedure writing and systems selection.

Trainers

- a. Trainers shall conduct training according to ANSI/ASSE Z490.1, Criteria for Accepted Practices in Safety, Health and Environmental Training, and the requirements of this PD.
- b. Trainers shall:
 - Understand the typical fall hazards, regulations, standards, and equipment used in the industry they are instructing. Training provided shall be customized to the industry and/or employer;
 - Evaluate the fall protection knowledge and skills of trainees through written testing and performance assessments;
 - Possess documented experience, knowledge, and skills in adult education methods; and
 - Continue their fall protection and rescue education.

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B. Fall Prevention and Protection Training and Evaluations

1. General Requirements:

Trainers

- a. Fall prevention and protection training shall be developed and delivered according to ANSI/ASSE Z490.1 and the requirements of this PD.
- b. Trainers shall conduct training according to ANSI/ASSE Z490.1 and the requirements of this PD.

2. Needs Assessment:

UCOR Program
Administrator/
UCOR FPPP SME

- a. A needs assessment shall be developed, specific to identified fall hazards, that includes:
 - Training outline, including timeline;
 - Learning objectives;
 - Prerequisites (if any);
 - Required training aids (manuals, equipment, audio/visual, physical environment);
 - Trainee to instructor ratio;
 - Methods for evaluation; and
 - Minimum performance requirements of trainees.

NOTE: UCOR is responsible for determining the duration and delivery methods of fall protection training. UCOR also can add or subtract items from the training list to ensure the fall protection training is applicable to the workplace according to the needs assessment.

UCOR Program
Administrator/
UCOR FPPP SME

- b. The specific content of which fall protection systems are included in the training shall be determined by the training needs assessment. Training content is developed according to the scope of fall protection methods, equipment, and rescue systems in use. The contents shall include the before-use inspection, assembly, use and disassembly of applicable fall protection equipment.

C. Designated Role Fall Protection Training

1. UCOR Program Administrator Training Outline:

- a. UCOR Program Administrator training (LEARN Module 034509) shall be provided by approved and authorized trainers or vendors. See Attachment B for the UCOR Program Administrator training outline.

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2. Qualified Person Training Outline:

- a. Qualified Person training (LEARN Module 034510) shall be provided by approved and authorized trainers or vendors. See Attachment C for the Qualified Person training outline.

3. Competent Person/Competent Rescuer Training Outlines:

- a. Competent Person/Competent Rescuer training shall be provided by UCOR trainers in accordance with LEARN Module 034506, Fall Protection – Competent Person/Competent Rescuer Training.

Project S&H Operations
Manager/Designee and
UCOR Program
Administrator

- Competent Person designations must be documented on Form-2972, Competent Person Designation Form, and approved by the project S&H Operations Manager and the UCOR Program Administrator. See Attachment D for the Competent Person training outline and Attachment E for the Competent Rescuer training outline.

4. Authorized Person/Authorized Rescuer Training Outlines:

Supervisor

- a. Authorized Person/Authorized Rescuer training shall be provided by UCOR trainers in accordance with LEARN Module 034503, Fall Protection – Authorized Person/Authorized Rescuer Training. See Attachments F and G for the Authorized Person and Authorized Rescuer training outlines, respectively.

5. Competent Rope Access Person Training Outline:

- a. Competent Rope Access Person training shall be provided by approved and authorized trainers or vendors. See Attachment H for the Competent Rope Access Person training outline.

6. Authorized Rope Access Person Training Outline:

- a. Authorized Rope Access Person training shall be provided by approved and authorized trainers or vendors. See Attachment I for the Authorized Rope Access training outline.

D. Retraining

NOTE: Retraining is a UCOR responsibility that may be triggered by any of the events listed in this section. The frequency and duration of training that a person may require to remain proficient varies with the number and types of fall protection systems used.

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Supervisor

1. Retraining shall be provided as necessary. Workers shall be retrained when any of the following occur:
 - Changes in the fall protection program/procedure render previous training obsolete;
 - Changes in fall protection or rescue equipment render previous training obsolete;
 - Inadequacies in a worker's performance indicates a lack of knowledge or skill;
 - A condition in the workplace changes in a manner that could affect the safe use of the fall protection or rescue equipment;
 - Deficiencies are identified in training requirements; and
 - Two years have passed since the last training (refresher training).
2. **IF** none of the conditions listed in Step D.1 apply, **THEN** the duration for retraining shall be conducted as follows:
 - Authorized Person — Every two years
 - Competent Person — Every two years
 - Authorized Rescuer — Every two years with annual drill
 - Competent Rescuer — Every two years with annual drill
 - Authorized Rope Access Person — Every two years
 - Competent Rope Access Person — Every two years

NOTE 1: It is recommended that UCOR Program Administrator(s) and Qualified Person(s) accumulate 0.8 International Association for Continuing Education and Training approved Continuing Education Units every year that relate to fall protection and rescue.

NOTE 2: It is recommended that Trainer(s) accumulate 1.6 International Association for Continuing Education and Training approved Continuing Education Units every year that relate to fall protection and rescue.

Workers

3. Workers meeting the conditions of Step D.1 must successfully complete:
 - Authorized Person – LEARN Module 034507, Fall Protection – Authorized Person/Authorized Rescue Training Refresher
 - Competent Person – LEARN Module 034508, Fall Protection – Competent Person/Competent Rescue Training Refresher
 - Authorized Rope Access Person – Training provided by UCOR-approved and authorized trainers or vendors.
 - Competent Rope Access Person – Training provided by UCOR-approved and authorized trainers or vendors.

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UCOR Program Administrator

4. If the UCOR Program Administrator determines retraining every two years is not beneficial, then Qualified Person(s), Competent Person(s), Authorized Person(s), Competent Rescuer(s), and Authorized Rescuer(s) shall be evaluated by a trainer at least annually to ensure those individuals remain capable of performing their assigned duties. This evaluation shall include a written examination and performance assessment(s) according to the needs assessment.
5. A training plan for retraining shall be developed for UCOR Program Administrator(s), Qualified Person(s), and Trainer(s) to continue their fall protection and rescue education.
6. Trainers conducting fall protection and rescue training shall meet the requirements of ANSI/ASSE Z490.1 and be approved by the UCOR Training organization.

E. Training Documentation

NOTE: Training documentation may be kept in electronic format.

Trainers

1. Training and evaluations for fall protection and rescue training shall be documented and retained for the current and previous training program.
2. At a minimum, all training shall be documented in the Local Education Administrative Requirements Network (LEARN).

F. Eliminating and Controlling Fall Hazards

1. General Requirements for Eliminating and Controlling Fall Hazards:

NOTE 1: All fall hazards can be eliminated, prevented, or controlled. Control measures are not mutually exclusive; there may be situations when more than one control measure is used. The hierarchy of fall hazard controls complements the generally accepted hierarchy of health and safety controls. A safety control's effectiveness decreases with an increased reliance on human behavior and equipment.

NOTE 2: When local conditions (number of Authorized Person[s], frequency of task, duration of task, etc.) are considered, it is possible that a lower solution on the hierarchy is the most applicable for the task. The fall hazard hierarchy's intent is the fall protection program has a process to continually evaluate fall hazards and work towards eliminating fall hazards, preventing exposure, preventing a fall using fall protection equipment and arresting the fall using fall protection equipment.

UCOR Program Administrator

- a. The UCOR Program Administrator collects fall hazard survey information via Form-3745 and ensures the most appropriate control method(s) are being applied.

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2. Fall Hazard Hierarchy of Controls:

Qualified Person/
Competent Person

- a. The Fall Hazard Hierarchy of Controls shall be utilized to mitigate fall hazards. Methods listed below are in decreasing order of preference:
 - Prevent or eliminate exposure; or
 - Passive fall protection; or
 - Active fall protection systems
 - Travel restraint system
 - Fall arrest system
 - Administrative controls

- b. In situations where a fall could result in impalement or other injury (e.g., working over a hot process, operating equipment), passive and/or active fall protection systems shall be utilized regardless of the potential falling distance.

- c. Mitigation control methods shall adhere to the hierarchy of controls described below:
 - **Prevent or Eliminate Exposure:** The preferred order of hazard mitigation is elimination or substitution such as moving planned work to ground level or substitution of a process, sequence, or procedure so workers or visitors are no longer exposed to a fall hazard.
 - **Passive Fall Protection:** Such as isolating or separating workers or visitors from the fall hazard using engineering controls such as, guardrails, handrails, walls, covers, scaffolding, railings, and/or vertical netting is the next preferable form of work at height hazard mitigation. A safety net may also be used, see Step I.4, Personal Safety Net Systems.
 - **Active Fall Protection Systems:** If the previous two methods are infeasible, then active fall protection systems may be employed:
 - **Travel Restraint System** – Includes securing an Authorized Person to an anchor using a lanyard that is short enough to prevent the Authorized Person(s)' center of mass from reaching the actual fall hazard. Travel restraint systems are only to be used on walking or working surfaces with a slope of less than 4/12 pitch (18.4°), or
 - **Fall Arrest System** – Includes systems to stop an Authorized Person's fall after it has begun (e.g., full body harness, self-retracting device, lifelines, etc.).

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NOTE: Authorized Person(s) working or traveling on permanent decks, floors, and walkways that are free of fall hazards are not required to wear full body harnesses and lanyards.

- **Administrative controls** – There is no passive or active fall protection system when using administrative controls. They improve awareness of Authorized Person(s) through procedures, training, warning lines, and/or safety monitors. The number of Authorized Person (s) exposed to hazards using administrative controls shall be minimized:

Project S&H Operations
Manager/Designee,
Supervisor, Qualified
Person, Facility
Manager, FPPP SME

- Administrative control measures are the least preferred method to protect Authorized Person(s) at height and shall be approved, at a minimum, by the project S&H Operations Manager (or designee), Supervisor, Qualified Person, Facility Manager, and FPPP SME by completing Form-3746 and Form-3747 prior to performing any elevated work that may require the use of any administrative control.

Licensed Health Care
Provider

- Evaluate worker’s medical suitability to wear a full body harness and determine any limitation applicability relating to the scope of this PD.

Supervisor

- d. Confirms with the Licensed Health Care Professional any medical limitations established for their worker(s) and assign duties consistent with those limitations (refer to PPD-MD-8003, *Occupational Medical Program*).
- e. The following conditions are exceptions to the requirement to perform a fall hazard survey, develop a fall hazard plan, or the need for a fall protection permit:

NOTE: Evaluate the need for wearing fall protection when erecting or dismantling scaffolding. Fall protection will be utilized by scaffold erectors during erection or dismantling activities when working at elevations greater than 10 feet (3.05m) and the use of such protection does not create a greater hazard as determined by the fall protection QP.

Project S&H Operations
Manager/Designee,
Supervisor, Qualified
Person, Facility
Manager, FPPP SME

- Work is performed from complete (installed as required by manufacturer’s guidelines) units of scaffolding that are erected under direction of a Scaffold Competent Person, are properly tagged, and inspected per the requirements of PROC-FO-1015, *Scaffolds and Ladders*.
- Work is performed from an Mobile Elevating Work Platform (MEWP), per the requirements of PROC-FO-3036, *Mobile Elevating Work Platform Operation*. Occupants shall wear a full body harness with an approved self-retracting device or other adjustable lanyard that prevents the worker from being ejected and must be attached to the manufacturer-provided anchor point.
- **IF** an MEWP is allowed by the manufacturer to be used as an anchorage point for an Authorized Person working outside of the platform, **THEN** follow the manufacturer’s guidance and instruction. Form-3746 shall be used as additional guidance.

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Project S&H Operations
 Manager/Designee,
 Supervisor, Qualified
 Person, Facility
 Manager, FPPP SME

- Work is performed from an MEWP with a guarded platform (e.g., scissors-lift). However, when the manufacturer provides a designated anchorage point, then the occupants on the MEWP must wear appropriate fall protection equipment and be secured to the anchorage point using an approved connector that prevents the worker from being ejected from the MEWP, and
- Work is performed in accordance with operating procedures and the Job Hazard Analysis (JHA).

f. Active fall arrest systems shall limit the arresting force on the Authorized Person to that specified by the regulations. In the absence of regulatory specifications, the Maximum Arresting Force (MAF) on the Authorized Person shall be 1,800 pounds (8 kN) or less.

G. Fall Protection Planning

1. General Requirements for Fall Protection Planning:

NOTE: Form-3745 should provide the UCOR Program Administrator and others with pertinent information as to the type of fall hazard: the basic configuration of the hazard (graphics, drawings, pictures); the frequency of the job; height of the potential fall; the suggested corrective solution(s); and the type of rescue equipment (if required) to be used. See Attachment J for Fall Protection Options.

Competent Person

- a. Form-3745 shall be completed to identify each potential fall hazard to which a worker and/or Authorized Person may be exposed, and a survey prepared. The survey shall consider fall hazards at the specific work area as well as fall hazards encountered while accessing the work area. The survey shall identify one or more methods to eliminate, prevent exposure to, or control each identified fall hazard.
- b. Additionally, those tasks that require Authorized Person(s) to work above rotating machinery, hazardous chemicals, vehicular traffic, water, or other recognized hazards shall be included in the assessment. The assessment shall include the potential for persons falling because of working at height as well as the hazards of objects, machinery, and tools that may fall from a height, potentially striking a person working below.

2. Fall Hazard Survey:

Competent Person/
 Qualified Person

- a. Form-3745 shall be conducted and developed by a Competent Person and/or a Qualified Person, with the assistance of a Safety Professional who is familiar with, and has access to, information about local work processes, environmental factors, policy, and best industry practices, and who collects input from the Authorized Person(s) conducting work and the work team familiar with workplace activities. Form-3745 shall be reviewed by the project S&H Operations Manager or designee, Supervision, Facility Manager, SME, Qualified Person, and /or Competent Person to develop Form-3746.

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Competent Person/
Qualified Person

- b.** Form-3745 should identify all current and predictable workplace paths of Authorized Person(s) working at heights, all fall hazards along such paths, and the locations and distances to all obstructions in potential fall paths, including obstructions that would be impacted during swing falls. Examples include:
- Hot objects, sparks, flames, and heat-producing operations;
 - Chemicals hazardous to the Authorized Person(s) or to the fall protection system and components;
 - Electrical hazards;
 - Environmental contaminant of any form;
 - Sharp objects, sharp edges, and abrasive surfaces;
 - Moving equipment and materials;
 - Unstable, uneven, and slippery walking/working surfaces, unguarded openings;
 - Climatic and weather factors;
 - Other materials or circumstances which could adversely affect the fall protection system; and
 - Foreseeable changes in any of these conditions taken individually or collectively.
- c.** Form-3745 should consider risk factors to assist in the evaluation of fall hazards to include, where applicable:
- Reason for the exposure;
 - Severity of the fall (level of injury or death);
 - Frequency of the task;
 - Duration of the task;
 - Occurrence of the task;
 - Obstructions in the fall task;
 - Existing fall protection systems or equipment;
 - Access and egress from the fall hazards area;
 - Environmental conditions;
 - Other workers/contractors in the immediate area;
 - Proximity to the fall hazard;
 - Other safety hazards (i.e., moving equipment, work process, electrical conductivity, entanglement, cutting and abrading of equipment, etc.);
 - History of accidents or incidents related to the task or structure;

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Competent Person/
Qualified Person

- Range of mobility in each fall hazard zone;
- Potential anchorage location;
- Available clearance; and
- Number of personnel exposed to fall hazards.

3. Fall Protection Plan:

Qualified Person/
Competent Person/
Supervision/Project
S&H Operations
Manager/designee/
Facility Manager/
FPPP SME

- a.** Where active fall protection systems and/or administrative controls are used, a task-specific fall protection plan shall be prepared and maintained by a Competent Person and/or Qualified Person with the assistance of a Safety Professional using information within Form-3745. The Fall Protection Plan shall include the time it takes to locate to the task (e.g., installing an active fall protection system, climbing a ladder with a ladder safety system, or descending a pit or vault).
- b.** Form-3746 shall be approved by the Qualified Person, Supervision, project S&H Operations Manager/designee, Facility Manager, and FPPP SME before work commences.
- c.** Form-3746 shall specify:
 - Fall hazards at the work site. Consult the applicable Form-3745;
 - Fall Protection System to be used (e.g., guardrails, travel restraint, fall arrest) and as applicable specify:
 - Adequate anchor points available at each location where active fall protection systems are used (confirm any engineered anchor point documentation and inspection data is available);
 - Clearance distances and applicable system components;
 - Assembly/disassembly, maintenance, inspection and use of the applicable system components;
 - Site-specific procedures for the active fall protection system(s) to be used; and
 - Limitations of the systems to be used.
 - A rescue plan including the procedures to be used if an Authorized Person falls, is suspended by an active fall arrest system or safety net and needs to be rescued or requires rescuing from the working height.

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Qualified Person/
Competent Person/
Supervision/Project
S&H Operations
Manager/designee/
Facility Manager/
FPPP SME

- d. The completed Form-3746 shall be available at the work site and reviewed with all Authorized Person(s), including affected workers, before beginning any authorized work where there is a risk of falling or potential exposure to a fall. This includes any training, review of equipment usage, and all applicable equipment manuals.
- e. Identify fall hazards on an ongoing basis and review fall protection equipment needs. If conditions change or it is determined the system in use does not provide adequate protection, the work from heights shall be suspended. Form-3746 shall be appropriately revised and reissued prior to work recommencing.

4. Fall Protection Permit:

Facility Manager/
Competent Person/
Safety Professional

- a. **WHEN** elimination methods or passive fall protection methods (e.g., guardrails, walls, floors) are not feasible, **THEN** Form-3747 must be used with Form-3746.
- b. Form-3746 shall be supplemented with Form-3747.
 - This may include but is not limited to steep slope work along graded roads, rope access systems on vertical or nearly vertical surfaces, and work in other remote or inaccessible steep work areas.
- c. Any changes made to Form-3746 require reapproval.
- d. Authorized Person(s) working under Form-3747 shall review the permit, be properly trained, and be accompanied by a Competent Person.
- e. Form-3747 shall be approved before work at heights begins. If environmental factors pose an increased risk (e.g., inclement weather, rain), then, Form-3747 shall not be authorized until work can be performed safely.
- f. Ensure the latest approved Form-3747 is available within the appropriate work control documents.

NOTE: A Competent Person should evaluate Form-3747 as necessary to validate adequacy of permit content.

Competent Person

- g. Revise Form-3747 when Form-3646 is changed and/or working or underlying conditions impact safe performance of work.

5. Clearance Distance:

NOTE: To understand required clearance distances, it is important to look to the manufacturer’s labels on each component of the fall protection system. Each component of the fall protection system will behave differently during a fall. Manufacturers are required to provide information to assist proper selection of components and accurate calculation of clearance requirements.

Qualified Person/
Competent Person

- a. Before using any active fall arrest system, the Qualified Person and/or Competent Person shall confirm they have selected a system that limits the MAF on an Authorized Person(s) to 1,800 pounds (8 kN) or less when used with a full body harness and be rigged such that an Authorized Person can neither free fall more than six feet, nor contact any lower level. Free fall instances greater than six feet shall be designed by a Qualified Person to ensure compliance with the applicable standards and regulations. The active fall arrest systems shall allow for ample clearance.
- b. Consideration shall be given to the stretch in the harness, flipping and sliding of the D-ring, stretch and elongation of the energy absorbing lanyard, elongation of the vertical lifeline (if present), and elongation of the horizontal lifeline (if present).
- c. Calculations shall be completed by the Qualified Person and/or Competent Person given the components of the active fall protection system to be used, the distance to the next level or obstruction below, and a safety factor, typically two feet, added.

NOTE: Confirm the equipment manufacturer’s specifications are consulted when calculating clearance requirements.

Qualified Person/
Competent Person

- d. Examples of Qualified Person clearance calculations shown in Figure 1:

Factor		Sub-factor		Feet	
FF	Free Fall	L _Y	Length of lanyard (from label)	6	
		H _{DA}	Anchorage distance from dorsal D-ring	Above -	
				Below +	-2
FF _A	Free fall arrester activation distance if applicable (e.g., rope grab or ladder climbing device and enter "0" if the system doesn't have one)		0		
DD	Deceleration Distance	MASD	Anchorage displacement	Rigid anchorage 0 ft.	
				Flexible anchorage (value provided by Qualified Person)	0
		X _{PEA}	Deployment of energy absorbing	Black label (12 ft. free fall)	5 ft.
				White label (6 ft. free fall)	4 ft.
	All others provided by QP		4		
SO	Stretch Out	X _W	Default (per ANSI/ASSP Z359.11) 1.5 ft.	1.5	
			Manufacturer's data		
SM	Safety Margin	E = 2 ft. unless specified otherwise by Qualified Person		2	
REQUIRED CLEARANCE				11.5	

Qualified Person/
Competent Person

Factor		Sub-factor		Feet	
FF	Free Fall	L _Y	Length of lanyard (from label)	6	
		H _{DA}	Anchorage distance from dorsal D-ring	Above	-
				Below	+
FF _A	Free fall arrester activation distance if applicable (e.g., rope grab or ladder climbing device and enter "0" if the system doesn't have one)		0		
DD	Deceleration Distance	MASD	Anchorage displacement	Rigid anchorage	0 ft.
				Flexible anchorage (value provided by Qualified Person)	
		X _{FEA}	Deployment of energy absorbing	Black label (12 ft. free fall)	5 ft.
				White label (6 ft. free fall)	4 ft.
		All others provided by QP			
SO	Stretch Out	X _W	Default (per ANSI/ASSP Z359.11)	1.5 ft.	
			Manufacturer's data		
SM	Safety Margin	E = 2 ft. unless specified otherwise by Qualified Person		2	
REQUIRED CLEARANCE				17.5	

Figure 1. Example of QP Clearance Calculations.

6. Fall Rescue Plan:

NOTE: Contact with the rescue subject (communication or physical contact) should occur as soon as possible after the fall. The recommended goal for rescue subject contact should be less than six minutes. What constitutes prompt rescue can vary depending upon the circumstances.

Qualified Person/
Competent Person

- a. UCOR shall plan and provide prompt rescue to all fallen Authorized Person(s).
- b. The Hierarchy of Rescue shall be utilized to mitigate rescue risks. The hierarchy of rescue shall also be utilized when designing fall protection solutions for all work scopes. The methods listed below are in decreasing order of rescue preference:
 - Elimination (i.e., travel restraint systems); or
 - Planned Rescue (i.e., self-rescue or assisted rescue); or
 - Response Rescue (i.e., 911 and fire department high-angle rope rescue)

Competent Person/
Safety Professional

- c. A fall rescue plan shall be developed and included in Form-3746 and/or Work Document for each specific project where Authorized Person(s) will be working at height. The fall rescue plan shall incorporate procedures that will confirm prompt rescue if any Authorized Person(s) falls. As a minimum, the rescue plan should include:
 - Effective rescue planning shall be established in advance of an event requiring the use of personal fall arrest systems. Rescue measures shall be capable of being initiated within five minutes of a fall and the Authorized Person(s) shall be able to be relieved of strap pressure within 20 minutes to prevent orthostatic intolerance, commonly known as suspension trauma;

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Competent Person/
Safety Professional

- Specific equipment and procedures to facilitate self-rescue, if applicable and appropriate.
- d. The appropriate rescue option shall be selected from the following:
- **Self-Rescue** – A reliable method for self-rescue shall be developed and deployed which shall include the use of the “buddy system” when Authorized Person(s) are working in conditions where fall protection systems (other than standard guardrail systems) are employed. The “buddy” or assigned Competent Rescuer shall remain within visual/verbal range to initiate rescue of the fallen worker if required and shall have a reliable method of communication (cell phone, radio, etc.) to summon rescue.
 - **Assisted Rescue** – Provided either by qualified company personnel or by a response rescue agency. Select the appropriate choice below (qualified company personnel or response rescue agency):
 - UCOR assigned Competent Rescuer(s) and Authorized Rescuer(s) may be used to provide prompt rescue of fallen Authorized Person(s). If outside professional rescue agencies cannot be relied upon to promptly rescue fallen Authorized Person(s), then company personnel shall be identified and trained to serve as rescue personnel. Training shall be conducted by a qualified Trainer, training agency or company, and shall include specific training on the methods and equipment which may be required during site-specific rescue scenarios. It shall include hands-on training and certification to demonstrate proficiency in rescue and shall be of the duration recommended by the qualified Trainer, training agency or company. Equipment procured for use, as well as practice requirements (drills) and recurring formal training requirements for the company rescue personnel, shall conform to the recommendations and requirements set forth by the qualified Trainer, training agency or company and regulatory requirements; or
 - **Response Rescue** – A Professional Rescue Agency may be used to provide prompt rescue of fallen Authorized Person(s). If a professional rescue agency is going to be used, then they shall be contacted to review the potential rescue requirements. This review shall include a discussion of the types of fall protection used by Authorized Person(s) and the environment where the agency may be called upon to perform a rescue. The rescue agency shall advise (in writing) the types of rescues it can perform and provide detailed instructions regarding how they are to be called and if they need to be advised when certain activities are planned, or certain conditions exist to provide the fastest possible response.

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NOTE: If any of the listed Fire Departments are below minimum staffing, then all elevated work activities must be curtailed until the Facility Manager re-releases work.

Competent Person/
Safety Professional

- As applicable, procedures for utilizing outside rescue services (e.g., client facility emergency services, local fire department rescue services, etc.). If such planning relies on the availability of the City of Oak Ridge Fire Department Heritage Center (formerly: East Tennessee Technology Park) (Station 4), the Oak Ridge National Laboratory Fire Department, or the Y-12 National Security Complex Fire Department for rescue, verify rescue resources are available for the applicable site;
 - Contact information for the proposed emergency services and method of summoning help;
 - Confirmation that outside rescue services will attend a rescue call; and
 - Coordination requirements such as procedures for familiarizing the proposed rescues services with the potential rescue conditions.
- e. Rescue equipment used for self-rescue or assisted rescue (i.e., self-retracting device [SRD] with rescue capability) shall meet the requirements of ANSI/ASSE Z359.4, Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components, and ANSI/ASSP Z359.14, Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems.

H. Working at Heights

All

1. General Requirements:

- a. Fall protection systems are required and will be provided for any work/job/task to be performed at heights as determined by the applicable standards and regulations. In the absence of applicable rules and/or regulations governing this type of work, the default requirement shall be six feet in the construction and demolition industry, and four feet in other industries (general industry).

Qualified Person/
Competent Person

- b. Prior to work at heights commencing, Form-3745 and the appropriate Form-3746, and Form-3747 shall be in place and be reviewed with all affected Authorized Person(s). Refer to PROC-EH-2006.

I. Fall Prevention

Qualified Person/
Competent Person

1. General Requirements:

- a. The preferred method of protecting UCOR workers is hazard elimination.
- b. Form-3745 will be used to determine if a hazard can be eliminated.
- c. If the hazard cannot be eliminated, then passive fall protection methods shall be utilized before active fall protection systems are considered.

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Qualified Person/
Competent Person

2. Guardrails:

When possible, work areas under the control of UCOR that can expose an employee, worker, or visitor to a wall opening, open-sided floor, or platform of heights greater than that specified by the applicable regulation, shall be equipped with a guardrail as follows:

- a.** In the absence of applicable rules and/or regulations, the default minimum height shall be six feet in the construction and demolition industry, and four feet in other industries (general industry);
- b.** Maintain all passive fall protection equipment throughout the duration of the activity and authorize any reconfiguration made to passive fall protection equipment. Unless otherwise governed by a more stringent local regulation, the guardrail system consists of a:
 - Top rail of 2 x 4-inch lumber or equivalent material 42 +/- 3 inches above the walking/working surface;
 - A nominal 4-inch-tall toeboard mounted at the walking/working surface is required when falling objects create a potential overhead hazard to workers at a lower level;
 - Top rail of the guardrail system must be capable of supporting 200 pounds force in any direction with minimum deflection; and
 - These systems may be used to guard open sides of floors, platforms, and walkways in elevated areas.
- c.** Install paneling or screening from the top of the toeboard to the top rail or mid-rail when tools, equipment, or materials are piled higher than the top of the toeboard. Sidewalk sheds or canopies may be provided as appropriate; and
- d.** Toeboards, covers, and guardrails shall be constructed in the manner as described in the regulations and shall not be removed without adjusting the fall protection plan to mitigate the hazard.
- e.** When guardrails are used around holes that are used for access, such as ladderways, then provide a self-closing gate or offset the guardrail so a person cannot walk directly into the hole.
- f.** When guardrails are used at hoisting areas, then place a gate, or removable guardrail section across the access point when hoisting operations are not taking place.

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Qualified Person/
Competent Person

- g. Where wire rope is used for construction of guardrail systems:
 - Confirm the wire rope used for construction of the guardrail system is a minimum of ¼ inch in diameter;
 - Flag the top rail with high-visibility material every six feet; and
 - Attach wire rope to existing structures, equipment, or other wire ropes using appropriate and recommended number of fasteners (e.g., Crosby® clips).
- h. Wooden guardrails and/or guardrails that have been constructed must be inspected regularly.

3. Hole Covers, Floor Openings, and Wall Openings:

Supervisor/Worker

IF an employee, worker, or visitor is exposed to a floor opening, or a wall opening (see Attachment A for Definitions/Acronyms) that may constitute a fall hazard, **THEN**

ensure the following:

- a. Working surfaces on, at, above, or near wall openings (including those with chutes attached) where 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, travel restraint system, or fall arrest system;
- b. Guardrails are the best method of protecting workers and visitors around openings in floors and roofs, but are sometimes not practical and hole covers are required;
- c. Provide walking/working surface with hole covers that can support at least twice the weight of workers, equipment, and materials that may be imposed on the cover at any one time or with ¾-inch exterior grade plywood or the equivalent. Hole covers will extend a minimum of four inches from the edge of the entire opening being covered;
- d. Secure covers at the time of installation to prevent displacement by the wind, equipment, or workers;
- e. All hole covers shall be clearly marked to provide warning of the hazard (e.g., DANGER: DO NOT REMOVE. HOLE IN FLOOR). Barricade tape shall not be used for this purpose;
- f. Hole covers for floor openings greater than 40 inches at their narrowest dimension of the floor opening shall be treated as a temporary floor. Consult with project engineering and the project safety lead for all temporary floor construction;
- g. Provide covers in roadways and vehicle aisles that can support at least twice the maximum axle load of the largest vehicle expected to cross over the cover.

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4. Personal Safety Net Systems:

Supervisor/
Qualified Person

- a.** Applications involving personal safety net systems shall adhere to ANSI/ASSP A10.11 – Safety Requirements for Personal Safety Nets.

J. Active Fall Protection Systems

Qualified Person/
Competent Person

1. General Requirements:

- a.** All components and products used in active fall protection or rescue systems, for which requirements have been established, shall meet the requirements in the applicable ANSI/ASSP Z359, Fall Protection Code.

NOTE: Predictive calculations may be used when they are substantiated and verified by traceable test documentation or based on fundamental and traditional engineering mechanics that are accepted in other areas of engineering design.

Qualified Person

- b.** Design of permanent active fall protection systems shall be based on results of predictive calculations made by a Qualified Person according to ANSI/ASSP Z359.6.
- c.** All aspects of active fall protection systems shall be designed, installed, and used under the supervision of a Qualified Person, ensuring a minimum safety factor of at least 2:1 is maintained in all components of the system (e.g., the static strength of the system should be at least two times the required MAF).
- d.** Active fall protection systems shall meet applicable regulatory requirements and bear the required standards (i.e., ANSI and OSHA) labels, markings, and be tagged as formally inspected and certified annually according to the manufacturer’s specifications. Additionally, a Declaration of Conformance or Certificate of Conformance is required for procuring any fall protection equipment.
- e.** Any hoisting and rigging equipment used for the purposes of an active fall protection systems shall be new and tagged for use as “Fall Protection Systems Only”.
- f.** Travel restraint systems shall be considered before use of fall arrest systems. Travel restraint systems shall:
- Ensure travel restraint systems are designed such that Authorized Person(s) cannot access a free fall situation by restricting the length of the lanyard or by other means. If an Authorized Person can fall more than a same level fall, then the travel restraint system is not properly designed.
 - A travel restraint system shall be limited to a working surface that is flat or less than 4:12 slope (18.4 degrees) from horizontal.

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- Qualified Person
- g.** Set up a fall arrest system to limit the free fall distance to the shortest distance possible.
 - h.** Equipment compatibility shall be determined by a Qualified Person before use.
 - i.** Never tie off to guardrail systems or hoists unless the intended anchor point is certified by Qualified Person.
 - j.** Active fall protection systems shall be protected against cuts and abrasions.
 - k.** Body belts are prohibited as a means of fall arrest, although they may have application as a positioning device with approval.

2. Full Body Harnesses:

- Competent Person
- a.** Use only full body harnesses that meet the applicable ANSI/ASSP Z359.11, Safety Requirements for Full Body Harnesses, specifications.
 - Full body harnesses and lanyards must be compatible. Using equipment from the same manufacturer is one way to improve compatibility;
 - Full body harnesses shall be suitably sized for the body mass and shape of the wearer as specified in PROC-EH-2006;
 - Full body harnesses shall be equipped with a suspension trauma safety strap;
 - Full body harnesses used by Electrical Linemen working around high voltage equipment or structures shall be industry designed that will resist arc flash and/or prevent or reduce the conductivity of the harness. This specific harness shall meet the American Society for Testing and Materials (ASTM) F887, Standard Specifications for Personal Climbing Equipment, and ANSI/ASSP Z359.1, The Fall Protection Code, and the equipment must bear a labeling stating such.

3. Connectors:

- a.** All connectors shall meet the ANSI/ASSP Z359.12, Connecting Components for Personal Fall Arrest Systems, specifications.
 - All connectors (i.e., snap hooks, carabiners, D-rings, O-rings, and oval rings) shall be marked from the manufacturer per ANSI/ASSP Z359.12.
 - All connectors used as adjusters (i.e., buckles, oval rings used as adjusters, and adjusters) shall be marked from the manufacturer per ANSI/ASSP Z359.12;
 - All anchorage connectors shall be marked from the manufacturer per ANSI/ASSP Z359.18, Safety Requirements for Anchorage Connectors for Active Fall Protection Systems.

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4. Anchors:

Qualified Person/
Competent Person

- a.** Certified anchorages and or non-certified anchorages shall have an ultimate load capacity, location and compatibility proven before use by a Qualified Person, per Authorized Person(s) attached, in any direction in which the load may be applied.
- b.** Travel restraint anchors and work positioning anchors shall:
 - Work positioning anchorages shall be at least 3,000 lbs (13.3 kN) or designed by a Qualified Person for two times the foreseeable force for certified anchorages;
 - Travel restraint anchorages shall be at least 3,000 lbs (13.3 kN) or designed by a Qualified Person for two times the foreseeable force;
 - Anchorages shall be installed, used, and removed according to the manufacturer’s specifications; and
 - Travel restraint system anchorages shall also be permanently marked for use with “Travel Restraint Only” and removed from service immediately following completion of the work project or within the time specified by the manufacturer.
- c.** Fall arrest system anchors shall:
 - In the absence of applicable rules and/or regulations in a particular standard, whenever full body harnesses are used the default static strength of an anchor used in fall arrest systems shall be 5,000 pounds (22.2 kN) for non-certified anchorages, or two times the MAF for certified anchorages;
 - No more than one Authorized Person shall attach to a single anchor point unless manufactured and designed for this purpose;
 - Fall arrest anchors used with suspended platform activities shall be independent of the suspended platform anchor;
 - Anchorages for horizontal lifeline systems shall be designed, installed, and used in accordance with the manufacturer’s instructions or specifications certified by a Qualified Person or Professional Engineer; and
 - Qualified Person(s) shall locate a fall arrest anchor that is above the Authorized Person(s)’ D-ring, if possible, to reduce free fall distance and located to minimize the potential for a swing fall hazard.
- d.** Rescue (self-rescue, assisted rescue, or response rescue) anchors shall:
 - Be identified, selected, and documented on Form-3746.
 - Anchorages selected for rescue shall be capable of withstanding static loads of 3,000 lbs (13.3 kN) or five times the applied loads as designed by a Qualified Person.

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Qualified Person/
Competent Person

- e. Ensure certified anchorages and or non-certified anchorages used for fall restraint, fall arrest, positioning, or rescue are independent of any anchorage being used to support or suspend platforms and maintain a safety factor of at least two times the MAF.
- f. All anchors shall be inspected by the Authorized Person(s) before each use. Permanent anchors shall be tagged and inventoried to track inspections.
- g. Use of motor vehicles as anchoring points is prohibited, unless specified by equipment manufacturer and evaluated by a Qualified Person.

5. Energy Absorbers and Energy Absorbing Lanyards:

Competent Person

- a. All energy absorbers and energy absorbing lanyards shall meet the applicable ANSI/ASSP Z359.13, Personal Energy Absorbers and Energy Absorbing Lanyards, specifications.
- b. A six-foot free fall lanyard shall only be used when the anchor point is above the dorsal D-ring height and when the free fall distance is less than six feet; and

NOTE: A 12-foot free fall energy absorbing lanyard does not refer to the lanyard length. Instead, it refers to a free fall that is greater than six feet up to 12 feet which is created by the anchor point being located below the dorsal D-ring. The maximum length of the lanyard shall not exceed six feet.

Competent Person

- c. When the anchor point is located below the dorsal D-ring, then the free fall distance is greater than six feet, a 12-foot free fall lanyard must be used.
- d. Do not wrap the lanyards around beams, girders, pipes, etc. unless specifically designed by the manufacturer to tie-back onto itself; and
- e. Where tools are used that have the potential to sever, abrade, or burn lanyards or safety straps, replace synthetic materials with wire rope or wire-cored manila rope of equal strength.

6. Self-Retracting Devices (SRDs):

- a. SRDs shall be selected that meet current ANSI/ASSP Z359.14 as this is the most recent standard that includes stringent testing protocols.
 - Anchor SRDs to an anchorage with 5,000-pound (22.2 kN) capacity for non-certified anchorage, to an anchor point approved by an equipment manufacturer, or to a certified anchorage with a minimum of two times the MAF evaluated by a Qualified Person;
 - SRDs shall be connected to an anchorage by means of shackles, carabiners, and wire rope chokers or synthetic slings. Rope (synthetic or natural fiber) shall not be used to connect these devices.

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Competent Person

- SRD Classes:

NOTE: All new SRDs procured shall be Class 1 and Class 2 that meet the most current ANSI/ASSP Z359.14.

Competent Person

- **Class 1** SRDs shall be anchored at or above the dorsal D-ring with an arrest distance of 42 inches, shall be capable of sustaining a minimum tensile load of 5,000 pounds (22.2 kN) in the fully extended position, and provide an average arrest force of 1,350 pounds (5.8 kN) or less;
- **Class 2** SRDs may be anchored above or below the dorsal D-ring with an arrest distance of 42 inches, shall be capable of sustaining a minimum tensile load of 5,000 pounds (22.2 kN) in the fully extended position, and provide an average arrest force of 1,350 pounds (5.8 kN) or less;
- **Class A** SRDs with an arrest distance of 24 inches shall be capable of sustaining a minimum tensile load of 3,000 pounds (13.3 kN) in the fully extended position and provide an average arrest force of 1,350 pounds (6 kN) or less;
- **Class B** with an arrest distance of 54 inches shall be capable of sustaining a minimum tensile load of 5,000 pounds (22.2 kN) in the fully extended position and provide an average arrest force of 900 pounds (4 kN) or less.
- Specialty SRDs:

If an SRD-LE is needed for use near the edge of structure, then a Qualified Person shall be consulted to approve the application. This application warrants extra attention due to the increased free fall distance, swing fall, and/or striking objects.

Qualified Person

- **SRD for Leading Edges (SRD-LE)** – Are designed for use in the horizontal plane, anchored below the dorsal d-ring for fall arrest systems near the edge of a structure.
- **SRD for with Retrieval (SRD-R)** – Are those units with retrieval or rescue ability. The SRD-R is dual function, used for both fall arrest and for rescue.

NOTE: If needed, each SRD shall be equipped with a rope tag line for extending the device to elevations below the point of attachment.

Qualified Person

- b. An SRD shall not be used for a travel restraint system unless the SRD is shorter than the distance to the fall hazard and approved for use in a horizontal plane by the manufacturer;

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- Qualified Person
- c. All SRDs shall be marked from the manufacturer per ANSI/ASSP Z359.14, with particular attention to the following:
 - Average arresting force for the SRD class
 - Arrest distance for the SRD class
 - d. All SRDs with integral rescue capability (SRD-R) shall be marked from the manufacturer per ANSI/ASSP Z359.14, with particular attention to the following:
 - Average arresting force for the SRD class
 - Arrest distance for the SRD class
 - Minimum installation setback distance

7. Vertical Lifelines and Fall Arrestors:

- Competent Person
- a. All single anchor vertical lifelines and fall arresters (rope grabs) shall be marked from the manufacturer per ANSI/ASSP Z359.15, Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems.
 - b. Do not wrap rope around beams, girders, pipes, etc. Softeners shall be used to protect rope over edges.
 - c. Where tools are used that have the potential to sever, abrade, or burn lifelines, replace synthetic materials with wire rope or wire-cored manila rope of equal strength.

NOTE: As structures are erected or demolished, priority shall be given to the consideration of proper vertical lifeline placement.

- Competent Person
- d. Vertical lifelines shall be anchored independent of other systems at the top, consist of synthetic fiber or wire rope as directed by the manufacturer, and be capable of supporting 5,000 pounds (22.2 kN).
 - e. Vertical lifelines shall have a minimum breaking strength of 5,000 pounds (22.2 kN).
 - f. Confirm only one Authorized Person is attached to any one vertical lifeline.

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- Competent Person
- g. Use fall arrestors to attach to vertical lifelines, never use knots unless specific training allows:
 - Fall arrestors must be approved for the size rope used and are the only approved method for securing a safety lanyard to a vertical lifeline;
 - Fall arrestors shall be positioned on the lifeline at least at or above the shoulders of the user; and
 - An energy absorbing lanyard attached to a fall arrestor shall meet the applicable ANSI/CSA (CSA Group) standards and local regulatory requirements.
 - h. Lanyards shall not be attached to vertical lifelines by means of knots or loops unless specific training allows.
 - i. Maintain manufacturer's specifications of total dynamic load capability of vertical lifelines used.
 - j. Vertical lifelines in use shall be inspected monthly per manufacturers' specific guidelines and records of inspections shall be maintained.
 - k. Vertical lifelines shall not be used for any purpose other than fall protection.
 - l. Vertical lifelines are generally intended to provide mobility to workers at elevated areas.
 - m. Confirm each Authorized Person(s) working from a swing scaffold, bosun's chair, or other suspended work platform is provided with a lifeline separate from the suspended work platform.
8. Ladder Safety Systems:
- Supervisor
- a. Ensure Authorized Person(s) working from fixed ladders are trained in accordance with and comply with PROC-FO-1015.
- Competent Person
- b. All climbing ladder safety systems shall be marked from the manufacturer per ANSI/ASSP Z359.16, *Safety Requirements for Climbing Ladder Fall Arrest Systems (CLFAS)*.
- NOTE:** Do not install a ladder safety system on ladders that have ¾ inch, hollow, or aluminum rungs unless the ladders are designed to withstand the forces from a fall, consult with a Qualified Person.
- Qualified Person/
Competent Person
- c. Anchor strength for a ladder safety system shall be a minimum of 3,000 lbs (13.3 kN).
- Competent Person
- d. The connector between the sternal D-ring of the full body harness and the ladder safety system shall be no more than nine inches long.
 - e. Ladder safety systems shall limit the free fall distance to two feet or less.

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- Competent Person
- f. Ladder safety system components must be compatible, do not intermix manufacturer components unless specific manufacturer written authorization is provided.
 - g. There shall be a safe access transition at the top of a ladder system to the work area, work surface, or roof that protects Authorized Person(s) from a fall hazard.

9. Horizontal Lifelines:

NOTE: Design calculations of horizontal lifelines shall include drawings, required clearance, instructions on proper installation and use procedures, as well as inspection and recertification requirements.

- Qualified Person/
Competent Person
- a. Horizontal lifelines shall be designed, installed, and used according to an engineered design of a Qualified Person who is qualified in designing horizontal lifelines.
 - b. Horizontal lifelines shall be used under the direct supervision of a Competent Person.
 - c. Horizontal lifelines are generally intended to provide mobility to Authorized Person(s) at elevated areas.
 - d. Temporary horizontal lifelines that are commercially pre-designed by the manufacturer shall be installed and maintained per the manufacturer's directions under the supervision of a Qualified Person. The Competent Person may (if deemed appropriate by the Qualified Person) supervise the assembly, disassembly, use, and inspection of the temporary horizontal lifeline system(s), under the direction of the Qualified Person.
 - e. Horizontal lifelines and associated equipment shall be inspected prior to each use by an Authorized Person and at regular interval as determined by the Qualified Person.

10. Work Positioning System:

- Competent Person
- a. A work positioning system uses some of the same equipment as an active fall arrest system (i.e., a full body harness, etc.); however, a positioning system used alone does not constitute fall protection.
 - b. A work positioning system shall not be used as an active fall arrest system. While positioning, working with both hands free, an Authorized Person shall use a separate active fall arrest system that provides protection from a fall.
 - c. While using a positioning device when the Authorized Person(s) is exposed to a fall six feet or greater, an active fall arrest system is also required.
 - d. Work positioning devices shall limit free fall to less than two feet.

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- Competent Person
- e. A work positioning device shall be secured to an anchorage that can support at least twice the potential impact of an Authorized Person(s) fall or 3,000 lbs (13.3 kN), whichever is greater.
 - f. Work positioning assemblies are to be attached to D-rings at the full body harness belt location.

11. Suspended Systems:

- Qualified Person
- a. Types of suspended systems may include, but not be limited to:
 - Manually operated mechanical systems (i.e., pulleys or winches);
 - Pulleys used as a primary system use mechanical advantage with the use of multiple lines. Lifting ratios can vary from 1:1 to 5:1 to provide an Authorized Person better control of the system;
 - Winches used as a primary system, and in conjunction with a tripod or davit system, allow Authorized Person(s) access, egress, and/or rescue from vertical areas (i.e., tanks, silos, sewers, or other confined spaces);
 - b. Primary suspended systems that support an Authorized Person(s) weight shall be evaluated by a Competent Person to determine the need to suspend an Authorized Person(s). The Qualified Person shall decide on the appropriate system with consideration to the nature of the work, number of Authorized Person(s), physical ability of the Authorized Person(s), rescue capabilities, and the anchoring structure.
 - c. Primary suspended systems shall have a secondary system that is secured to an independent anchor.

NOTE: Descent control systems require Authorized Rope Access Person(s) to have proper training and a secondary system.

- Qualified Person/
Competent Person
- Descent control systems are manually operated friction control devices with a single rope used of rappelling;

NOTE: Rope access systems require independently anchored ropes. This type of system also requires Authorized Rope Access Person(s) to have proven consistent training and or be certified through an external agency like: Society of Professional Rope Access Technicians (SPRAT) or Industrial Rope Access Trade Association (IRATA) to ensure a minimum of physical ability, base knowledge, and skill sets.

- Qualified Person
- Rope access systems are a manually operated two rope systems that require specialized training, working in teams, specific planning, and detailed rescue planning;
 - Suspended platforms that are able to support an Authorized Person(s) via a scaffold or stage type platform. Suspended platform systems shall be designed by a Qualified Person.

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12. Equipment Inspection

Competent Person

- a. Ensure active fall protection equipment is inspected by the Competent Person on a regular basis, not to exceed one year (or more frequently if required by manufacturer's instructions or based on use), to verify the equipment is safe for use. Inspections shall be documented. Equipment shall be labeled/tagged to reflect the most recent inspection.
- b. Any active fall protection equipment that reveals an unsafe condition shall be removed from service and:
 - Tagged, destroyed, and appropriate supervision notified; or
 - Sent back to the manufacturer.
- c. Synthetic webbing shall not be taped, painted, or written on with markers, unless approved, in writing, by the manufacturer.
- d. Confirm manufacturer's labeling is present and legible.
- e. All fall protection equipment shall be re-certified as specified by the manufacturer.

Authorized Person

- f. Inspect all fall protection equipment prior to use in accordance with manufacturer's instructions.

13. Equipment Storage:

Competent Person/
Authorized Person

- a. All fall protection equipment should be kept clean, dry, and stored inside away from chemicals, moisture, abrasives, and sunlight.
- b. All fall protection equipment shall be stored under the guidance of a Competent Person, limiting access to only those personnel trained in the proper use of the equipment.

14. Skeletal Steel/Open Structures:

NOTE: The following activities typically occur in a construction environment and are, therefore, covered under the OSHA Construction Standard requiring fall protection when Authorized Person(s) are at six feet or more above ground level as described in the steps below.

Competent Person/
Authorized Person

- a. Ensure the following requirements are implemented as applicable when working on elevated skeletal steel/open structures:
 - Authorized Person(s) working or traveling in elevated skeletal steel/open structures at six feet or more above ground level or adjacent to completed surface shall wear an approved full body harness and be always secured to an appropriate anchorage to achieve 100 percent fall protection;

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Competent Person/
Authorized Person

- In lieu of horizontal or vertical lifelines, Authorized Person(s) may secure lanyards to substantial, stationary structural steel members, pipe and pipe supports as determined by a Competent Person or Qualified Person. Authorized Person(s) shall not secure lanyards to cable trays, conduit, small-bore pipe (< 3 inch standard wall), and/or screw pipe;
- Only Authorized Person(s) involved in work activities associated with the installation of equipment/materials to eliminate fall hazards may work on floors or walkways that are incomplete. These Authorized Person(s) must be provided with an active fall protection systems;
- Authorized Person(s) erecting or dismantling structural steel shall achieve 100 percent fall protection through use of full body harness/lanyards, SRDs, connectors, toggles, and/or an MEWP;
- MEWPs shall be maximized as a safe method of vertical travel in structural steel elevations; and
- Climbing of columns and diagonal structural steel members is prohibited.

15. Roof Work:

Performing roofing operations and working on roofs involves a high degree of risk. Requirements in this section are provided for the following operations:

a. Accessing Roofs:

NOTE: During development of the Form-3746 consideration should be given to the live load limit for the roof and the weight and placement of material, equipment, and workers.

Qualified Person/
Competent Person

- The Qualified Person shall document a roof structure assessment with load calculations on Form-3746. The Competent Person shall verify integrity of the roof structure working surfaces upon performance of work;

Competent Person/
Safety Professional

- Develop a task-specific plan using Form-3746 and Form-3747 for all roof work;

NOTE 1: When accessing a roof from a fixed or portable ladder and it is determined by the Competent Person that worker safety is better served, then the Authorized Person(s) may proceed directly away from the unprotected edge to the point of the task, then apply an active fall protection system (e.g., tie off with fall restraint or fall arrest system before going to work and remain tied off until the work is completed). The Authorized Person(s) may then unhook and walk straight toward the edge, keeping the unprotected edge in front of the Authorized Person(s) until reaching the access point.

NOTE 2: Roof access and work should generally be prohibited at night unless appropriate and adequate illumination is provided.

Competent Person

- The CP shall brief AP(s) on fall protection daily and following changes to the scope of work or conditions;

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Competent Person

b. Roofing Work on Low-Slope Roofs:

- The Competent Person shall ensure Authorized Person(s) engaged in roofing activities on low-slope roofs, less than 4:12 (horizontal to vertical), with unprotected sides and edges six feet or more above lower levels are protected from falling by a:
 - Guardrail system; or
 - Active fall protection system; or
 - Warning line system (see Attachment K) and a Safety Monitor (see Attachment M) of this PD.

c. Roofing Work on Steep-Slope Roofs:

- The Competent Person shall ensure Authorized Person(s) engaged in roofing activities on steep slope roofs, greater than 4:12 (horizontal to vertical), with unprotected sides and edges six feet or more above lower levels are protected from falling by a:
 - Guardrail system with toeboards; or
 - Safety net system; or
 - Active fall protection system.

d. Non-Roofing Construction Work on Low-Slope Roofs that is deemed “Frequent” or “Permanent”:

- The Competent Person shall ensure Authorized Person(s) engaged in non-roofing construction and/or maintenance work on low-slope roofs less than 15 feet from the roof edge are protected from falling by a:
 - Guardrail system; or
 - Safety net system; or
 - Active fall protection system.
- The Competent Person shall ensure Authorized Person(s) engaged in non-roofing construction and/or maintenance work on low-slope roofs and is performing work 15 feet or more from the roof edge are protected from falling by a:
 - Guardrail system; or
 - Safety net system; or
 - Active fall protection system; or
 - The Competent Person may use a designated area (see Attachment L).
- Authorized Person(s) are *prohibited* from going within 15 feet of the roof edge without using an active fall protection system.

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NOTE: The term “temporary” used in this PD means “that the duration of the task the worker performs is brief or short.” Temporary and brief or short tasks generally include those that a worker can perform in less time than it takes to install or set up conventional fall protection. “Infrequent” used in the PD means the task or job is performed only on occasion, when needed (e.g., equipment breakdown), on an occasional basis, or at sporadic or irregular intervals. Infrequent tasks include work activities such as annual maintenance or servicing of equipment, monthly or quarterly replacement of batteries or HVAC filters, and responding to equipment outage or breakdown.

e. Non-Roofing Construction Work on Low-Slope Roofs that is deemed “Infrequent” **AND** “Temporary”:

Competent Person

- The Competent Person shall ensure Authorized Person(s) engaged in non-roofing construction and/or maintenance work on low-slope roofs less than six feet from the roof edge are protected from falling by a:
 - Guardrail system; or
 - Safety net system; or
 - Active fall protection system.
- The Competent Person shall ensure Authorized Person(s) engaged in non-roofing construction and/or maintenance work on low-slope roofs at least six feet but less than 15 feet from the roof edge are protected from falling by a:
 - Guardrail system; or
 - Safety net system; or
 - Active fall protection system; or
 - Designated area.
- The Competent Person may use a designated area (see Attachment L).
- The Competent Person shall ensure Authorized Person(s) engaged in non-roofing construction and or maintenance work on low-slope roofs and is performed 15 feet or more from the roof edge are protected from falling by a:
 - Guardrail system; or
 - Safety net system; or
 - Active fall protection system; or
 - Designated area; or
 - Administrative control (i.e., Safety Monitor and training).

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Competent Person

- The Competent Person may use a designated area (see Attachment L) and a Safety Monitor (see Attachment M).

Authorized Person

- Authorized Person(s) are *prohibited* from going within 15 feet of the roof edge without using an active fall protection system.

16. Reinforcement Steel/Concrete Work:

Supervisor/
Authorized Person

a. Employ the following requirements when performing steel/concrete work:

- Authorized Person(s) working at six feet or more above ground level on rebar walls, piers, and on concrete form walls must have 100 percent fall protection;
- Fall protection can be achieved using SRDs, static lifeline and fall arresters or use of double lanyards;
- Authorized Person(s) working rebar or formed walls and elevated piers generally require a work positioning device (cannot be used for fall protection) and a fall protection lanyard; and
- On vertical rebar walls, the safety lanyard shall be secured either to a lifeline or a horizontal section of rebar (inner bar) at a point above the Authorized Person(s)' head.

17. Rigging Large Loads/Crane Assembly/Crane Maintenance:

NOTE: Refer to PROC-FO-1008, *Hoisting and Rigging Operations*, for other requirements regarding fall protection in conjunction with cranes.

Supervisor

a. Provide fall protection during hoisting and rigging operations that expose Authorized Person(s) to unprotected heights, using SRDs, full body harnesses/lanyards, minimizing movement in elevated areas by using MEWPs and, in some cases, ladders.

b. Walking of chords and lacings of crane booms during crane assembly and maintenance shall be evaluated by Competent Person to determine applicability.

c. IF working on crane cabs/superstructure, **THEN** the first Authorized Person up shall attach SRDs to be used by all Authorized Person(s) working on the elevation. Other means of fall protection can be used so long as they provide mobility and continuous safety.

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K. Fall-Related Incident Investigation

1. General Requirements:

All personnel

- a. Fall-related incidents shall be immediately reported to the project S&H Operations Manager or designee, UCOR Program Administrator, and Competent Person.
- b. An incident investigation shall consider all factors that contributed to the event including, but not limited to, a review of policies, procedures, training, the fall hazards survey, written fall protection plans, fall protection permits, equipment and related systems, and general communication.
- c. Any activity affecting the equipment or site involved in the incident shall cease, and the site and equipment secured, until the investigator permits activity to resume.
- d. After the incident, all equipment associated with a fall shall be immediately removed from service until the investigation is complete.

Competent Person

- e. A Competent Person shall inspect the fall protection equipment for damage and determine whether the equipment is suitable for use.

Qualified Person

- f. A Qualified Person shall inspect the anchorage and anchorage connector(s) for damage and determine whether the system is suitable for use.
- g. Incident investigation reports shall be retained on file per PROC-OS-1001, *Records Management, Including Document Control*, but not less than five years.

L. Evaluating Program Effectiveness

1. General Requirements:

UCOR Program Administrator

- a. The UCOR Program Administrator, with consultation from the UCOR SSS S&H Manager, shall ensure the fall protection program is evaluated at periodic intervals not to exceed two years and include:
 - i. A review of this PD and PROC-EH-2006 and their application in the workplace;
 - ii. A determination that duties and responsibilities have been appropriately assigned;
 - iii. A determination that the training for required personnel is adequate to perform their duties and responsibilities;
 - iv. A review of training programs to verify that fall protection training conforms to the current version of ANSI/ASSE Z490.1 and applicable regulations;

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UCOR Program
Administrator

- v. A review of existing fall hazard surveys to ensure all fall hazard exposures have been identified;
 - vi. A review of control methods of existing fall hazards that includes recommendations for improvement by employing a more preferred control method according to the hierarchy of controls;
 - vii. A review of all fall protection equipment and systems currently in use to determine if existing fall hazards can be eliminated or controlled using a more effective form of fall protection. See Section F, Eliminating and Controlling Fall Hazards, of this PD.
 - viii. A review of anchorage systems;
 - ix. A review of the process for purchasing fall protection equipment/systems to ensure such equipment/systems meets the requirements of ANSI/ASSP Z359.
 - x. A review of the inspection, maintenance, storage, and care procedures for fall protection equipment;
 - xi. A review of the fall protection plan and rescue plan;
 - xii. A review of insurance claims to identify procedures, workplace activities, or equipment that might be improved;
 - xiii. Evaluations of Authorized Person(s);
 - xiv. Rescue drills;
 - xv. A review of fall protection and prevention considerations for new buildings, facilities, and equipment; and
 - xvi. A review of incident investigations.
- b. The program shall be evaluated when Authorized Person(s) or Competent Person(s) identify deficiencies or when there are incidents involving injuries, property damage, or near misses.
 - c. The program evaluation shall identify the strengths and deficiencies for each element of the fall protection program along with recommendations for improvement. This evaluation shall be documented.
 - d. A documentation plan of action shall be developed; identifying what changes will be made; who is responsible for making each change; and when the change will be completed.
 - e. Program evaluations shall be retained on file per PROC-OS-1001, but not less than five years.

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M. Records

1. Records of training will be maintained according to PROC-TC-0702, *Training Program*.
2. Medical surveillance exams will be maintained according to PPD-MD-8003.
3. Records from this PD shall be retained by each project and/or office location, in accordance with PROC-OS-1001 or approved subcontract procedures, including:
 - Form-3746, Fall Protection Plan
 - Form-3747, Fall Protection Permit
 - Datasheets for monthly inspections of horizontal lifeline systems
 - All equipment inspection forms
 - Completed Form-2972, Competent Person Designation Form.

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100 Percent Fall Protection – Ensures workers are protected at all times through the use of prevention, elimination, passive fall protection, travel restraint systems, and/or personal fall arrest systems, when a fall hazard is present (including administrative controls).

Active fall protection – A system that requires workers to take specific actions, including wearing (and otherwise using) personal fall protection equipment, following prescribed procedures, and requires fall protection training. Examples include travel restraint and or fall arrest systems.

Adjuster – A component that provides a means to vary the length of a strap, webbing, or rope.

Aerial Device – Any vehicle mounted device, telescoping, or articulating, or both, used to position workers, see Mobile Elevating Work Platforms (MEWP).

Anchorage/Anchor Point – A secure connecting point capable of safely withstanding the impact forces applied to the fall arrest system. A fall arrest anchorage must be independent of any anchorage used to support suspended platforms.

Anchorage Connector – A component or subsystem that functions as an interface between the anchorage and a fall protection, work positioning, rope access or rescue system for the purpose of coupling the system to the anchorage.

ANSI – American National Standards Institute.

Assisted Rescue – A rescue requiring the assistance of others.

ASSP – American Society of Safety Professionals, formerly known as ASSE – American Society of Safety Engineers.

Authorized Person – An Employee assigned by UCOR to perform duties at a location where the person will be exposed to a fall hazard.

Authorized Rescuer – A person assigned by UCOR to perform rescue following a fall event.

Barricade – A wooden or metal guarding device, capable of withstanding a 200-pound force from any direction that is placed around a floor opening to keep persons from walking into the opening.

Body Belt – If permitted by the regulations, a belt worn around the waist that when attached to an anchor point with a lanyard prevents an Authorized Person from approaching a fall hazard (travel restraint). Safety belts/Body belts are prohibited as part of a fall arrest system.

Buckle – Any device for holding the body belt or body harness close around the Authorized Person(s)' body.

Carabiner – A connector generally comprised of a trapezoidal or oval shaped body with a closed gate or similar arrangement that may be opened to attach another object and, when released, automatically closes to retain the object. Carabiners must be self-closing, self-locking, and be capable of being opened only by at least two consecutive deliberate actions.

Certified Anchorage – An anchorage for fall arrest, positioning, restraint, or rescue system that a Qualified Person certifies to be capable of supporting the potential forces that could be encountered during a fall or meets the criteria for certified anchorage prescribed in ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program.

CFR – Code of Federal Regulations

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Compatible/Compatibility – Capable of orderly, efficient integration and operation with other elements or components in a system, without the need of special modification or conversion, such that the connection will not fail when used in the manner intended.

Competent Person – An individual designated by UCOR to be responsible for the immediate supervision, implementation, and monitoring of UCOR’s managed fall protection program who, through training and knowledge, is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has UCOR’s authority to take prompt corrective action with regard to such hazards.

Competent Rescuer – An individual designated by UCOR who by training, knowledge, and experience is capable of the implementation, supervision, and monitoring of UCOR’s fall protection rescue program.

Connector – A component or element that is used to couple parts of the system together.

Construction – Activities that fall within the scope of the OSHA Construction Standard, 29 CFR 1926, such as erection, installation, assembly, demolition, or fabrication activities involved to 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.

Controlled Access Zone (CAZ) – An area in which certain work may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.

CSA – CSA Group, formerly Canadian Standards Association.

D-Ring – An integral “D” shaped connector typically used in harnesses, lanyards, energy absorbers, lifelines, and anchorage connectors as an integral connector as an attachment point.

Dangerous equipment – Equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, and other units) which, as a result of form or function, may be hazardous to workers who fall onto or into such equipment.

Deceleration Device – A mechanism, such as a rope grab, rip-stitch lanyard, specially woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., that serves to dissipate a substantial amount of energy during a fall arrest or to otherwise limit the energy imposed on an employee during fall arrest.

Deceleration Distance – The vertical distance between the Authorize Person(s)’ fall arrest attachment at the onset of fall arrest forces during a fall, and after the fall arrest attachment comes to a complete stop.

Designated Area – An alternative to installing guardrails in situations where the work is of a temporary nature; surfaces have a slope from horizontal of 10 degrees or less; and the area is surrounded by a rope, wire, or chain and supporting stanchions erected in accordance with the criteria outlined in Attachment L of this PD. See definition for “Controlled Access Zone (CAZ)”.

DOE – U.S. Department of Energy

Elevated Work – Inspection, service, repair, maintenance, and other work activities performed above floor or ground level at heights requiring fall protection as specified by OSHA Standards 29 CFR 1910 and 1926. (Heights may vary depending on the work environment.)

Energy (Shock) Absorber (EA) – A component whose primary function is to dissipate energy and limit deceleration forces which the systems impose on the body during fall arrest.

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Energy Absorbing Lanyard – Lanyard that incorporates a personal energy absorber or other means to reduce the impact force on the user, anchor, and equipment during a fall. Energy absorbing lanyards reduce the impact but increase the total fall distance. Use energy absorbing lanyards that meet the requirements of ANSI.

Equivalent – Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for Authorized Person(s) than the methods, materials or designs specified in the procedure.

Failure – Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

Fall Arrest System – Is an active fall protection system where the action or event of stopping a free fall or the instant where the downward free fall has been stopped.

Fall Arrester – A device that travels on a lifeline and will automatically engage or lock onto the lifeline in the event of a fall. See Rope Grab.

Fall Hazard – Any condition in the workplace that exposes a person to a potential injury from fall.

Fall Protection – Any equipment, device, or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall.

Floor Opening – Any gap or void measuring 12 inches or more at its smallest dimension in any roof, floor, or platform through which worker could fall.

Floor Opening Cover – All floor openings 40 inches or less at their narrowest dimensions are to be covered and secured using ¾-inch exterior grade plywood or the equivalent with adequate bracing underneath. Floor opening covers will extend a minimum of four inches from the edge of the entire opening being covered. All floor openings greater than 40 inches from their narrowest dimension will be treated as a temporary floor. Consult with a Qualified Person and the project Safety Lead/Representative for all temporary floor construction.

FPPP – Fall Prevention and Protection Program

Free Fall – The act of falling before an active 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.

Full Body Harness – A body support device designed to transfer suspension forces or impacts during fall arrest to the pelvis. A full body harness is the only body support allowed by many regulatory agencies for fall arrest. A full body harness is required in circumstances where a free fall of any magnitude may occur because it more safely distributes the impact forces and allows longer suspension time while awaiting rescue.

Gate – The element of a connector that opens to receive an object and closes when released to retain the object.

Guardrail System – A passive fall protection method, a barrier erected to prevent workers and/or visitors from falling to lower levels.

Hardware – A rigid component or element that is used to couple parts of the system together.

Hazard Elimination – Changing the task, process, controls, or other means to remove the need for a person to be exposed to a fall hazard.

Hole – A gap or void two inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.

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Infeasible – That it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.

Inspection – An examination of equipment or systems to assess conformance to a particular standard.

Integral – Not removable from the component, subsystem, or system without destroying or mutilating any element or without use of a special tool.

Kilonewton (kN) – The kN is a unit used to measure force. One kN is equal to 1,000 newtons or 224.8 pounds, which are equal to the force needed to move one kilogram of mass at a rate of one meter per second squared.

Ladder Safety System – A type of fall protection used on long fixed ladders, poles, and towers that incorporates a permanently installed rail or cable that runs the length of the ladder. The Authorize Person(s)' harness is attached to the rail or cable by a sliding device or sleeve that allows climbing freedom but locks the instant a fall impact occurs.

Lanyard – A component consisting of a flexible rope, wire rope, or strap, which typically has as connector at each end for connecting to the body support and to a fall arrestor, energy absorber, anchorage connector, or anchorage. Lanyards perform a tethering function that restricts movement and can arrest a fall.

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.

LEARN – Local Education Administrative Requirements Network

Lifeline – 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.

Live Load – The dynamic force produced by the weights of worker(s), equipment, and materials on roofs and floors.

Low-Slope Roof – A roof having a slope of less than or equal to four in twelve (vertical to horizontal).

Lower Levels – Those areas or surfaces to which an employee, worker, or visitor can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

Maintenance – Activities that fall within the scope of the OSHA General Industry Standard, 29 CFR 1910, such as work that is anticipated, routine, and done on a regularly scheduled/periodic basis to help maintain the original condition of the component.

Marking – Any sign, label, stencil, plate, or the like containing information or guidance.

Maximum Arrest Force (MAF) – The largest amount of force that the fall protection system and the Authorized Person attached to the system will experience. OSHA standard 1926.502(d)(16)(ii) states that the MAF for an Authorized Person in a body harness weighing up to 310 pounds (e.g., body weight, personal protective equipment, and tools) **SHALL NOT** be exposed to a MAF in excess of 1,800 pound (8 kN).

Mechanical Equipment – All motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mop carts.

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Mobile Elevating Work Platforms (MEWP) – Any number of vehicle-mounted or portable and extendable work platforms including, but not limited to, aerial devices, boom platforms, telescoping derricks, articulating booms, vertical lifts, and suspended and powered personnel platforms.

Non-Certified Anchorage – An anchorage not based on a Qualified Person calculation that a Competent Person has selected to be capable of supporting the predetermined anchorage forces as defined in ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program.

OSHA – Occupational Safety and Health Administration.

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.

Orthostatic Intolerance – A condition of restricted blood circulation in the legs of Authorized Person suspended in an active fall arrest system or especially in a full body harness after a fall from height.

Passive Fall Protection – Fall protection that does not require the wearing or use of personal fall protection equipment.

PD – Program description

Platform – A walking/working surface for persons elevated above the surrounding floor or ground, such as a balcony or platform for the operation of machinery and equipment. For purposes of elevated work safety, platforms are interpreted to be any elevated surface upon which Authorized Person(s) are required or allowed to walk or work while performing assigned tasks such as inspection, service, repair, or maintenance on a predictable and regular basis.

PPE – personal protective equipment

Positioning Device – A system installed to allow an Authorized Person to be supported on an elevated vertical surface, such as a wall, and work with both hands free.

Qualified Person – A person who by possession of a recognized degree, certificate, or professional standing, or who, by knowledge, training, and experience, has successfully demonstrated an ability to design fall protection systems and solve or resolve problems relating to fall protection and fall protection systems. The Qualified Person is designated by the UCOR Program Administrator with concurrence from the UCOR Chief Engineer.

Rollout – A process by which a snap hook or carabiner unintentionally disengages from another connector or object to which it is coupled. Forced rollout occurs when a locking snap hook or carabiner’s gate bends or breaks during disengagement and is “forced” open.

Roof – The exterior surface on the top of a building. This does not include floors or form work 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.

Rope Grab – A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an Authorized Person. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

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Safety-Monitoring System/Safety Monitor – An administrative control in which a Competent Person is responsible for recognizing and warning workers of fall hazards. When fall prevention and protection measures are not feasible, then a safety monitoring system may be justified and requires an approved Form-3746, Fall Protection Plan, and the Form-3747, Fall Protection Permit.

Scaffold – Any temporary elevated platform and its supporting structure used for supporting workers or material, or both.

Self-Retracting Device (SRD) – A device that contains a drum-wound line that automatically locks at the onset of a fall to arrest the Authorized Person but pays out from and automatically retracts into the drum during normal movement of the person to whom the line is attached.

S&H – Safety and Health

Snap hook – A connector comprised of a hook-shaped member with a normally closed gate or similar arrangement that may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap hooks must be self-closing, self-locking, and capable of being opened only by at least two consecutive deliberate actions.

SSS – Safety, Systems, and Services

Standard Railing – Railing provided to enclose open-sided work platforms and consisting of a top rail, intermediate rail, toeboard, and posts.

Static Strength – The ultimate capacity of a component or an assembly to support a static load without breaking or deforming in such a way that the load is released.

Steep Roof/Steep-Slope Roof – A roof having a slope of greater than four in twelve (vertical to horizontal).

Subject Matter Expert (SME) – Serves as the UCOR interpretive authority and primary point of contact for matters related to fall prevention and protection.

Suspension Trauma – See “Orthostatic Intolerance.”

Swing Falls – A pendulum-like motion that occurs during and/or after a vertical fall. A swing fall results when an Authorized Person begins a fall from a position that is located horizontally away from a fixed anchorage.

Toeboard – A low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

Travel Restraint System – An active fall protection system where the use of equipment is assembled in such a manner that an Authorize Person cannot fall. Travel restraint systems are characterized by the Authorized Person remaining on the same surface they were working on if a fall should occur. Travel restraint systems do not allow an Authorize Person to free fall; therefore, the system does not generate the same amount of energy as fall arrest systems, reducing the risk of injury.

UCOR – United Cleanup Oak Ridge LLC

UCOR Program Administrator – Individual(s) that are responsible for the development, implementation, monitoring, and evaluation of the fall protection program.

Unprotected Sides and Edges – Any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches high.

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Voluntary Consensus Standards – (DOE Order 252.1A) Standards developed or adopted by voluntary consensus standards bodies, both domestic and international. Examples of voluntary consensus standards are those promulgated by the American National Standards Institute (ANSI), the American Society for Testing and Materials (ASTM), the National Fire Protection Association (NFPA), and many others.

Walking/Working Surface – Any surface, whether horizontal or vertical on which an employee, worker, or visitor walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which individuals must be located in order to perform their job duties.

Wall Opening – A gap or void 30 inches or higher and 18 inches or wider in any wall or partition through which an employee, worker, or visitor may fall to a lower level, such as doorways, chute openings, or rigging openings.

Warning Line System – A barrier erected to warn Authorized Person(s) that they are approaching an unprotected edge, and which designates an area in which work may take place without the use of guardrail or other fall arrest systems to protect Authorized Person(s) in the area.

Wall Opening Cover – Wall openings will be barricaded with guardrails of metal or wood, and a toe plate will be required if the wall opening is less than four inches above the floor or platform level. Wall openings may be covered using ¾ inch exterior grade plywood or the equivalent that is secured and overlaps the edge of the wall opening a minimum of four inches.

Work at Heights – Any work/job/task to be performed above the normal walking/working surface that necessitates the use of some form of fall protection as determined by the applicable governing rules and regulations. In the absence of applicable rules and/or regulations governing this type of work, the default requirement shall be six feet or greater in the construction, mining, and demolition industry, and four feet or greater in other industries (general industry).

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Attachment B
UCOR Program Administrator Training Outline
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1. UCOR Program Administrator training includes information and training regarding:
 - Development and maintenance of an effective fall protection program;
 - Fall protection hierarchy of controls;
 - Applicable fall protection regulations and standards;
 - Responsibilities, selection, and appointment of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program;
 - Selection and appointment of Competent Person(s) and Qualified Person(s);
 - Development of fall protection plans on Form-3746; and
 - Accident/incident investigations|

2. In addition, UCOR Program Administrators are trained in all equipment and practices applicable to the scope of work. Equipment training contains instruction and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions of:
 - Anchorage connectors;
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Energy absorbers;
 - Energy absorbing and restraint lanyards;
 - Full body harnesses;
 - Self-retracting devices;
 - Single anchor vertical lifelines and fall arrester;
 - Climbing ladder fall arrest systems;
 - Horizontal lifelines;
 - Work-positioning and restraint lanyards and assemblies;
 - Descent control systems (friction operated devices) with emphasis for independent fall protection system;
 - Pulley and winch systems (block and tackles, self-retracting devices with retrieval ability) with an emphasis for independent fall protection system;
 - Passive fall protection systems (guardrails, covers, barriers, nets); and
 - Local engineered and/or custom fall protection systems and equipment.

3. Practices training includes instruction and performance assessments of the following, as applicable:
 - Identifying fall hazards;
 - Surveying fall hazards;
 - Identifying primary means of support and secondary fall protection systems;
 - Selection of fall protection systems;
 - Writing, use, and implementing local fall protection procedures;
 - Developing equipment purchasing lists;
 - Developing engineered system standards;
 - Developing, implementing, and monitoring of training programs; and
 - Evaluating program effectiveness.

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Attachment C
Qualified Person Training Outline
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1. Qualified Person training includes information and training regarding:
 - Fall protection hierarchy of controls;
 - Applicable fall protection regulations and standards; and
 - Responsibilities of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program.

2. In addition, Qualified Person(s) are trained on all equipment and practices applicable to the scope of work, as selected by the UCOR Program Administrator.

3. Equipment training contains instructions and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions for:
 - Anchorage connectors (tie-off adaptor, beam clamps, etc.) in use;
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Energy absorbers;
 - Energy absorbing and restraint lanyards;
 - Full body harnesses;
 - Self-retracting devices;
 - Single anchor vertical lifelines and fall arresters;
 - Climbing ladder fall arrest systems;
 - Horizontal lifelines;
 - Work-positioning lanyards and assemblies;
 - Descent control systems (friction operated devices) with emphasis for independent fall protection system;
 - Pulley and winch systems (block and tackles, self-retracting devices with retrieval ability) with an emphasis for independent fall protection systems;
 - Passive fall protection systems (guardrails, covers, barriers, safety nets); and
 - Local engineered and/or custom fall protection systems and equipment.

4. Practices training includes instructions and performance assessments of the following, as applicable:
 - Identifying fall hazards;
 - Conducting fall hazard surveys;
 - Identifying primary means of support and secondary fall protection systems;
 - Selecting a fall protection system;
 - Calculating required clearance and actual deceleration distances for fall arrest systems and methods for controlling the clearance;
 - Designing, selecting, and analyzing anchorages;
 - Assessing system component compatibility;
 - Determining when fall protection systems are infeasible;
 - Designing new and evaluating existing horizontal lifelines;
 - Inspecting (detailed and documented) equipment components and systems;
 - Assessing Fall protection systems and determining when a system is safe;

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- Determining swing fall impact forces;
- Determining potential impact forces;
- Developing equipment purchasing lists;
- Developing written fall protection plans on Form-3746, Fall Protection Plan;
- Developing engineered systems standards; and
- Investigating accidents/incidents.

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Attachment D
Competent Person Training Outline
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1. Competent Person training includes information and training regarding:
 - Fall protection hierarchy of controls;
 - Applicable fall protection regulations and standards;
 - Surveying fall hazards;
 - Responsibilities of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program;
 - Detailed inspection of equipment components and systems;
 - Assessing fall protection systems and determining when a system is safe to use; and
 - Implementing fall protection plans on Form-3746, Fall Protection Plan.

2. In addition, Competent Person(s) are trained on all equipment and practices applicable to the scope of work, as selected by the UCOR Program Administrator.

3. Equipment training contains instruction and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions for:
 - Anchorage connectors;
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Energy absorbers and deceleration distances;
 - Energy absorbing lanyards;
 - Full body harnesses;
 - Self-retracting devices and deceleration distances;
 - Single anchor vertical lifelines and fall arresters;
 - Climbing ladder fall arrest systems;
 - Horizontal lifelines;
 - Work-positioning and restraint lanyards and assemblies;
 - Descent control systems (friction operated devices) with emphasis for independent fall protection system;
 - Pulley and winch systems (block and tackles, self-retracting devices with retrieval ability) with an emphasis for independent fall protection systems;
 - Passive fall protection systems (guardrails, covers, barriers, nets); and
 - Local engineered and/or custom fall protection systems and equipment.

4. Practices training includes instruction and performance assessments of the following, as applicable:
 - Identification of fall hazards and developing a Form-3745, Fall Hazard Survey;
 - Identification of primary means of support and secondary fall protection systems;
 - Selection and use of non-certified anchorages with a focus on strength and location;
 - Calculation of maximum deceleration and arrest distances for the control of clearance requirements for fall arrest systems;
 - Estimation and methods for the control of swing falls;
 - Use of fall protection equipment in travel restraint and work positioning applications;

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Competent Person Training Outline
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- Estimation and methods for the control of free fall distances;
- Estimation and methods for the control of arresting forces; and
- Principles of 100% fall protection and how to remain protected while transferring from one fall protection system or structure to another.

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Attachment E
Competent Rescuer Training Outline
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1. Competent Rescuer training includes information and training regarding:
 - Fall hazard control methods associated with rescue operations;
 - Applicable fall protection and rescue regulations and standards;
 - The responsibilities of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program;
 - Fall hazard assessment to determine rescue methods;
 - Detailed inspection and recording of rescue equipment components and systems;
 - Rescue system assessments and determining when a system is unsafe;
 - Development of fall protection plans on Form-3746, Fall Protection Plan; and
 - Local rescue system(s) assembly and use.

2. In addition, Competent Rescuer(s) should be trained on all equipment and practices applicable to the scope of work, as selected by the UCOR Program Administrator.

3. Equipment training contains instructions and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions for:
 - Anchorage connectors (tie-off adapter, beam clamps, etc.);
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Energy absorbers;
 - Energy absorbing lanyards;
 - Full body harnesses;
 - Rescue harnesses and rescue body holding devices;
 - Self-retracting devices;
 - Single anchor vertical lifelines and fall arrester;
 - Climbing ladder fall arrest systems;
 - Horizontal lifelines;
 - Work-positioning lanyards and assemblies;
 - Descent control systems (friction operated devices) with emphasis for independent fall protection system;
 - Belay devices;
 - Pulley and winch systems (block and tackles, self-retracting devices with retrieval ability) with an emphasis for independent fall protection systems;
 - Passive fall protection systems (guardrails, covers, barriers); and
 - Local engineered and/or custom fall protection systems and equipment.

4. Practices training includes instructions and performance assessments of the following, as applicable:
 - Identification of fall hazards;
 - Identification of primary means of support and secondary fall protection systems;
 - Selection of non-certified anchorages with a focus on strength and location;
 - Selection, installation, and use of belay systems as fall protection for rescue subjects;

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Attachment E
Competent Rescuer Training Outline
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- Estimation and methods for the control of swing falls;
- Use of fall protection equipment in travel restraint applications;
- Estimation and methods for the control of free fall distances;
- Estimation and methods for the control of arresting forces;
- Principles of 100% fall protection and how to remain protected while transferring from one fall protection system or structure to another;
- Principles of rescue system assembly, focusing on the reduction and control of connections, free fall distances, arresting forces, swing fall and ease of rescue;
- Estimation of rescue loads and mechanical advantages; and
- Methods of safely releasing rescue subjects from fall arrest systems.

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Attachment F
Authorized Person Training Outline
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1. Every Authorized Person receives training from a trainer before they are exposed to a fall hazard. Authorized Person training contains information and training regarding:
 - Fall hazard recognition;
 - Fall prevention and control methods;
 - Applicable fall protection regulations and standards;
 - Responsibilities of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program;
 - Before-use inspection of equipment components and systems; and
 - Understanding use of fall protection plans on Form-3746, Fall Protection Plan.

2. In addition, Authorized Person(s) will be trained in all equipment and practices applicable to the scope of work, as selected by the UCOR Program Administrator.

3. Equipment training contains instructions and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions for:
 - Anchorage connector(s) and tie-off techniques;
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Personal energy absorbers;
 - Energy absorbing and restraint lanyards;
 - Full body harnesses;
 - Self-retracting devices;
 - Single anchor vertical lifelines and fall arresters;
 - Climbing ladder fall arrest systems;
 - Temporary horizontal lifelines;
 - Work-positioning lanyards and assemblies;
 - Descent control systems (friction operated devices) with emphasis for independent fall protection systems;
 - Pulley and winch systems (block and tackles, self-retracting devices with rescue capability) with an emphasis for independent fall protection systems;
 - Passive fall protection systems (guardrails, covers, barriers, nets); and
 - Local engineered and/or custom fall protection systems and equipment.

4. Practices training contains instructions and performance assessments of the following, as applicable:
 - Estimation of free fall distances;
 - Estimation of swing falls;
 - Estimation of total fall distance and clearance requirements for fall arrest systems;
 - Estimation of arresting forces; and
 - Principles of 100% fall protection and how to remain protected while transferring from one fall protection system or structure to another.

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Attachment G
Authorized Rescuer Training Outline
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1. Authorized Rescuers receive training before they are exposed to a fall hazard or a potential rescue event. Authorized Rescuers training includes information and training regarding:
 - Fall hazard recognition;
 - Fall prevention and control methods;
 - Applicable fall protection regulations and standards;
 - Responsibilities of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program;
 - Use of fall protection plans on Form-3746, Fall Protection Plan;
 - Local rescue system(s) assembly and use; and
 - Before-use inspection of the local rescue system(s).

2. In addition, Authorized Rescuer(s) are trained in all equipment and practices applicable to the scope of work, as selected by the UCOR Program Administrator.

3. Equipment training contains instructions and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions for:
 - Anchorage connectors (tie-off adapters, beam clamps, etc.) in use;
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Energy absorbers;
 - Energy absorbing and restraint lanyards;
 - Full body harnesses;
 - Rescue harnesses and rescue body holding devices;
 - Self-retracting devices;
 - Single anchor vertical lifelines and fall arrester;
 - Climbing ladder fall arrest safety systems;
 - Horizontal lifelines;
 - Work-positioning lanyards and assemblies;
 - Descent control systems (friction operated devices) with emphasis for independent fall protection systems;
 - Belay devices;
 - Pulley and winch systems (block and tackles, self-retracting devices with retrieval ability) with an emphasis for independent fall protection systems;
 - Passive fall protection systems (guardrails, covers, barriers); and
 - Local engineered or custom fall protection systems and equipment.

4. Practices training contains instructions and performance assessments of the following, as applicable:
 - Identification of fall hazards;
 - Identification and a primary means of support and secondary fall protection systems;
 - Installation of belay systems as fall protection for rescue subjects;
 - Use and application of knots applicable to rescue;

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Attachment G
Authorized Rescuer Training Outline
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- Estimation and methods for the control of swing falls;
- Use of fall protection equipment in travel restraint applications;
- Estimation and methods for the control of free fall distances;
- Estimation and methods for the control of arresting forces;
- Principles of 100% fall protection and how to remain protected while transferring from one fall protection system or structure to another;
- Principles of rescue system assembly, focusing on the reduction and control of connections, free fall distances, arresting forces, swing fall and ease of rescue;
- Estimation of rescue loads and mechanical advantages; and
- Methods of safely releasing rescue subjects from fall arrest systems.

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Attachment H
Competent Rope Access Person Training Outline
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1. Competent Rope Access Person training includes:
 - Fall hazard recognition;
 - Fall protection hierarchy of controls;
 - Applicable fall protection regulations and standards;
 - The responsibilities of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program;
 - Supervision and monitoring of suspended rope work;
 - Before-use inspection of equipment components and systems;
 - Development and use of fall protection procedures and rope access plan;
 - Selection of applicable rope access and fall protection equipment; and
 - Inspection of applicable rope access and fall protection equipment.

2. In addition, Competent Rope Access Person(s) are trained on all equipment and practices applicable to the scope of work, as selected by the UCOR Program Administrator.

3. Equipment training includes instruction and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions for:
 - Anchorage connector(s) and tie-off techniques;
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Personal Energy absorbers;
 - Energy absorbing lanyards;
 - Full body harnesses;
 - Self-retracting devices;
 - Single anchor vertical lifelines and fall arrester;
 - Climbing ladder fall arrest systems;
 - Temporary horizontal lifelines;
 - Life safety rope;
 - Bosun chairs and/or work seats;
 - Pulley and winch systems (block and tackles, self-retracting devices with retrieval ability) with an emphasis for independent fall protection systems;
 - Passive fall protection systems (guardrails, covers, barriers, nets); and
 - Engineered and/or custom fall protection systems and equipment.

4. General Practices training contains instruction and performance assessments of the following, as applicable:
 - Estimation of free fall distances and total free fall distances;
 - Estimation of swing falls;
 - Estimation of total clearance requirements for fall arrest systems;
 - Estimation of arresting forces;
 - Principles of 100% fall protection and how to remain protected while transferring from one anchorage system or structure to another;

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Attachment H
Competent Rope Access Training Outline
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- Tying of knots applicable to rope access;
- Ascending, to include transfer to descending and troubleshooting;
- Descending, to include transfer to ascending and troubleshooting;
- Transferring from one rope to another.

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Attachment I
Authorized Rope Access Person Training Outline
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1. Every Authorized Rope Access Person receives training from a Trainer before they are exposed to a fall hazard. Authorized Rope Access Person(s) training includes information and training regarding:
 - Fall hazard recognition;
 - Fall hazard elimination and control methods;
 - Applicable fall protection regulations and standards;
 - The responsibilities of designated persons under ANSI/ASSE Z359.2, Minimum Requirements for a Comprehensive Managed Fall Protection Program;
 - Before-use inspection of equipment components and systems; and
 - The use of fall protection procedures and rope access plan.

2. In addition, Authorized Rope Access Person(s) are trained on all equipment and practices applicable to the scope of work, as selected by the UCOR Program Administrator.

3. Equipment training contains instruction and performance assessments of personal fall protection equipment to include before-use inspection, assembly, use, disassembly, and storage according to the manufacturers' instructions for:
 - Anchorage connector(s) and anchoring techniques;
 - Connectors (snap hooks, carabiners, D-rings, etc.) in use, with emphasis to recognize incompatible connections;
 - Personal energy absorbers;
 - Energy absorbing and restraint lanyards;
 - Full body harnesses;
 - Self-retracting devices;
 - Single anchor vertical lifelines and fall arresters;
 - Climbing ladder fall arrest systems;
 - Temporary horizontal lifelines;
 - Work-positioning lanyards and assemblies;
 - Descent control systems (friction operated devices) with emphasis for independent fall protection systems;
 - Life safety rope;
 - Bosun chairs and/or work seats;
 - Pulley and winch systems (block and tackles, self-retracting devices with retrieval ability) with an emphasis for independent fall protection systems;
 - Passive fall protection systems (guardrails, covers, barriers, nets); and
 - Engineered and/or custom fall protection systems and equipment.

4. Practices training includes instruction and performance assessments of the following, as applicable:
 - Estimation of free fall distances;
 - Estimation of swing falls;
 - Estimation of total clearance requirements for fall arrest systems;
 - Estimation of arresting forces;

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Authorized Rope Access Person Training Outline
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- Principles of 100% fall protection and how to remain protected while transferring from one anchorage system or structure to another;
- Tying knots applicable to rope access;
- Ascending, to include transfer ascending and troubleshooting;
- Transferring from one rope to another;
- Transferring from ascent to descent;
- Passing knots on ascent and/or descent;
- Passing a deviation anchor;
- Passing intermediate anchors;
- Aid climbing;
- Negotiating an edge on ascent and descent;
- Rope management skills including storage, handling, protection, and edge protection;
- Self-rescue from tangled lines, failed mainline, and failed secondary system; and
- Communication method(s) while on-rope including notifying others and notification of issues or emergencies.

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Attachment J
Fall Protection Hierarchy of Controls Options
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This table is a general guideline for Fall Protection Hierarchy of Controls options. Due to the complexity of the requirements for fall protection, contact your Competent Person and project Safety Lead/Representative for assistance in determining specific fall protection requirements based upon the work to be performed.

Fall Hazard	Fall Protection Options (Depending on Height)
Unprotected sides and edges on a walking/working surface (horizontal or vertical) (includes maintenance work on a roof with a pitch of less than 10 degrees)	<ul style="list-style-type: none"> • Guardrail system • Safety net system • Active fall protection system • Combination of designated area and safety monitoring system
Hoist areas	<ul style="list-style-type: none"> • Guardrail system • Fall arrest system
Floor openings (including skylights)	<ul style="list-style-type: none"> • Guardrail system • Active fall protection system • Covers
Ramps, runways, and other walkways	<ul style="list-style-type: none"> • Guardrail system
Excavations (including wells, pits, shafts)	<ul style="list-style-type: none"> • Guardrail system • Fences • Barricades • Covers
Working over dangerous equipment	<ul style="list-style-type: none"> • Guardrail system • Equipment guards • Active fall protection system • Safety net system
Roofing work on low-slope roofs	<ul style="list-style-type: none"> • Guardrail system • Safety net system • Active fall protection system • Combination of warning line system and safety monitoring system
Non-roofing construction work on low-slope roofs	<ul style="list-style-type: none"> • Guardrail system • Safety net system • Active fall protection system • Combination of non-conforming guardrail and safety monitoring system
Roofing work on steep roofs	<ul style="list-style-type: none"> • Guardrail system with toeboard • Safety net system • Active fall protection system
Wall openings (including those with chutes attached)	<ul style="list-style-type: none"> • Guardrail system • Safety net system • Active fall protection system

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Attachment K
Warning Line Systems Used For Roofing Work on Low-Slope Roofs
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While performing roofing work and using a warning line system, the Competent Person (CP) ensures:

- The warning line is erected around all open sides of the roof work area.
- When mechanical equipment is not being used, the warning line is erected no less than six feet from the roof edge for roofing work.
- When mechanical equipment is being used while performing low-slope roofing work only, the warning line is erected no less than six feet from the roof edge which is parallel to the direction of mechanical equipment operation, and no less than 10 feet from the roof edge which is perpendicular to the direction of mechanical equipment operation.
- Points of access, material handling areas, storage areas, and hoisting areas are 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 barricade, equivalent in strength and height to the warning line, is placed across the path at the point where the path intersects the warning line erected around the work area or the path will be offset so an Authorized Person cannot walk directly into the work area.

The CP ensures each warning line system consist of ropes, wires, or chains, and supporting stanchions erected as follows:

- The rope, wire, or chain is flagged at no more than 6-foot intervals with high-visibility material.
- The rope, wire, or chain is installed 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 are 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 has a minimum tensile strength of 500 pounds (2.22 kN), and after being attached to the stanchions are capable of supporting, without breaking, the loads applied to the stanchions as prescribed in the above paragraph.
- The line is 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 Authorized Person is allowed in the work area between a roof's edge and a warning line unless the Authorized Person is performing roofing work in that area. If the Authorized Person is working in the area between a roof's edge and the warning line system, then the Authorized Person will be protected by a fall protection system.
- Mechanical equipment on roofs used or stored only in areas where Authorized Person(s) are protected by a warning line system, guardrail system, travel restraint system, or fall arrest system.

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Attachment L
Designated Area used for Non-Roofing Construction Work on Low-Slope Roofs
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UCOR may establish designated areas as an alternative to installing guardrails where it can be demonstrated that workers within the designated areas are not exposed to fall hazards. The following conditions and requirements should be met to use designated areas in lieu of other fall prevention and protection measures.

While performing non-roofing construction work and or maintenance and using a designated area, the Competent Person ensures:

- Workers remain within the designated area while work operations are underway. **Authorized Person(s) understand that they are prohibited from going outside of the designated area;**
- No work or work-related activity is to take place in the area between the designated area and the opening or edge unless the Authorized Person(s) are using another form of fall protection;
- The perimeter of the designated area is delineated with a warning line consisting of a rope, wire, tape, or chain; and
- Access to the designated area will be by a clear path, formed by two lines, attached to stanchions, which meet the strength, height, and visibility requirements listed below.

The Competent Person ensures each designated area warning line:

- Has a minimum breaking strength of 200 pounds;
- Be installed so its lowest point, including sag, is no 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 limits;
- 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; and
- Is erected not less than six 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, then the employer must ensure the warning line is erected not less than six 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.

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Attachment M
Safety Monitoring Systems Working on Low-Slope Roofs
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A Competent Person **MUST** be designated as the Safety Monitor. The CP monitors the safety of other employees and complies with the following:

- The Competent Person is competent to recognize fall hazards;
- The Competent Person warns the Authorized Person when it appears that the worker is unaware of a fall hazard or is acting in an unsafe manner.
- The Competent Person will be on the same walking/working surface and within visual sighting distance of the Authorized Person(s) being monitored.
- The Competent Person will be close enough to communicate orally with the Authorized Person(s).
- The Competent Person will not have other responsibilities which could take the monitor's attention from the monitoring function.