SONOMA STATE UNIVERSITY

Sonoma State University - Roof Access Procedure

Sonoma State University (SSU) will take a conservative approach to roof access in order to minimize potential exposure to fall hazards while working on a roof. This approach involves restricting or limiting access to building roofs.

I. Scope

This procedure applies to all personnel and contractor access on any University roof. The primary focus of this procedure is to address concerns regarding employee exposure to falls when working on rooftops.

II. Definitions

Aerial lift – a generic term for elevated work platforms which include certain designs such as a scissors lift, cherry picker, bucket truck, etc.

Anchor point – A secure point of attachment for lifelines, lanyards or deceleration (grabbing) devices.

Body harness – An interconnected set of straps that may be secured about a person in a manner that distributes the fall arrest forces over at least the thigh, pelvic, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Deceleration device – Any mechanism, such as a rope, grabbing device, rip-stitch lanyard, specially woven lanyard or automatic self-retracting lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on a person during fall arrest.

Limited access – building roofs can be accessed by employees or contractors for short or long-term work. This requires the approval of the Maintenance Manager.

Personal Fall Arrest System (PFAS) – A system including but not limited to an anchor point, connectors, and a body harness used to arrest a worker in a fall from a working level.

Restricted access – building roofs require the approval of a Facilities Management Supervisor/Manager before any work is performed. All roofs at SSU are restricted access but may be downgraded to limited access once the type of work and control measures have been identified and protective measures have been approved.

Roof access – means going onto a roof by any means.

Rope grab (grabbing device) – A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

Self-retracting lifeline/lanyard – A deceleration device containing a drum-wound line, which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal movement and which, after onset of a fall, automatically locks the drum and arrests the fall (usually within two feet or less).

Unprotected sides and edges – Any side or edge of a walking/working surface where there is no wall or guardrail system at least 3-feet high.

III. Introduction

Employees and contractors on occasion are required to gain brief access to the roofs at SSU for such tasks as routine maintenance, equipment inspection, and minor roof/ gutter repairs. Less frequently, work may require employees or contractors to be on roofs for extended periods of time, such as when re-roofing. In keeping with the procedure to minimize potential employee exposure, building roofs will be categorized as restricted access. For short or long-term projects, a roof may be re-classified as limited access based upon the type of work performed.

NOTE: A site-specific safety plan must be written and submitted to Facilities Management and the Dept. of Environmental Health & Safety for approval prior to commencing any work requiring roof access.

IV. Building Roof Categories

a. Restricted Access

All roofs at SSU are restricted access due to the fall potential that exists. The Facilities Management Supervisor/Manager must be contacted prior to anyone accessing the roof and any work being performed. Access doors must be kept locked and posted with the sign shown below:

Caution

This roof is designated as

"Restricted Access"

Facilities Management & EHS approval is required before any access or work can be performed

Upon approval of the site-specific safety plan, access may be downgraded to limited access, once the type of work and control measures have been identified and protective measures have been implemented and approved.

b. Limited Access

Roofs having limited access were placed in that category due to the type and duration of roof work to be performed. Once protective measures have been implemented and approved for prolonged work, a contractor or employees do not need to obtain approval each time access to the roof is needed. If a contractor or employee(s) does not follow the protective measures, access to the roof will be denied and may result in disciplinary action.

V. Fall Protection Requirements – Roofs

Fall protection work controls are required to be implemented under the following conditions:

- Any work conducted at a height of 6 feet or greater and any work on the slope or peak of the roof.
- Any work or task within 6 feet of the unprotected side or edge of the roof.
- Any work within 6 feet of a skylight.

Work conducted in the “valleys” or in between the slopes of the roofs at SSU does not require fall protection unless workers are within 6 feet of an unprotected roof edge.

a. Work practices

Personnel must work in pairs at all times while conducting work where a potential for a fall exists. All work conducted within 6 feet of an unprotected edge requires the use of fall protection equipment and a warning line/demarcation to denote the 6-foot distance.

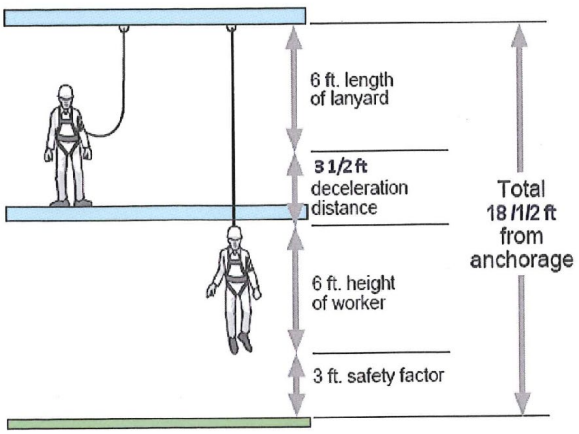
b. Fall protection equipment

Fall protection equipment consists of a body harness with a lanyard attached to the harness securely with a locking snap hook. The lanyard must be equipped with a deceleration device such as a soft-stop. A rope grab must be utilized on the ropes attached to the permanent fall protection anchors. Only properly maintained and inspected equipment shall be used for fall protection.

Workers shall inspect all equipment before use; if any equipment exhibits signs of wear, it must be removed from service immediately. Any harness, lanyard or rope grab subjected to a fall must be immediately removed from service.

In order to limit the distance a person may fall; the proper selection of fall protection is vital.

The diagram below demonstrates the proper method to calculate the fall distance when considering the appropriate fall protection.



How to determine total fall distance with a shock-absorbing lanyard.

c. Fall protection anchors

Fall protection anchors may be installed at intervals as part of a permanent fall protection system. Facilities Management would be responsible for the installation and maintenance of the fall protection anchors. Anyone requiring access to the roof should review the most current inspection record for the anchors to ensure the safety of the system prior to accessing the roof.

d. First-person up situations

If access is required to an elevated surface that does not contain any fall protection anchorage, or protected access, the first-person up principle may be used. Only trained and skilled persons, under the direct supervision of the Facilities Management Supervisor/Manager, may access an elevated surface without fall protection for the purpose of installing the necessary fall protection equipment prior to the start of the work activity, where required.

VI. Training

a. Employee training

Fall protection training will be provided to employees who may be exposed to fall hazards on a yearly basis. The training will enable employees to identify fall hazards and the procedures to follow to reduce the risk of a fall. Training will be conducted in compliance with Cal-OSHA regulations and is available on CSU Learn. The latest training certificate shall be maintained. Retraining shall be conducted when deficiencies in the program are noted.

b. Contractor Training

Contractors performing work at SSU must provide proof of current training for each employee accessing the roofs. In addition, contractors must review the site-specific

safety plan and the implementation of the roof access procedure to all employees prior to work commencing.

VII. Revision Record

Revision	Date	By	Description of Revision
0	9/2020	RL	New procedure implemented

Legend: RL = Ruth LeBlanc, Dir. Environmental Health & Safety

VIII. Attachments

Attachment A – Site Specific Fall Protection Plan

Attachment B – Roof Access Permit

SONOMA STATE UNIVERSITY

SITE SPECIFIC FALL PROTECTION PLAN 2021

Introduction

This document is intended to supplement the Sonoma State University Roof Access Procedure and provide guidance in the development of a Site-Specific Fall Protection Plan (The Safety Plan). The Safety Plan shall be designed to enable managers and employees to recognize the fall hazards of the campus and establish procedures that are to be followed to prevent falls.

The guidelines presented within this document represent the minimum requirements for development of a complete Safety Plan. The Safety Plan shall: (1) identify the specific locations where work will be performed, (2) include a Fall Hazard Identification and Prevention Worksheet, and (3) provide complete documentation on the details of the chosen fall protection measures. The Safety Plan shall be accepted by Sonoma State University Facilities Management Supervisors/Managers and Dept. of Environmental Health & Safety before work can begin.

It is understood that conditions may change during the course of work that require fall protection measures that deviate from the initial plan. Under these circumstances, the job supervisor shall immediately update the Safety Plan and notify SSU Facility Management and EHS of the changes.

Each employee shall be trained on the fall protection procedures specific to the job and shall strictly adhere to them except when doing so would expose the employee to a greater hazard. If, in the employee's opinion, this is the case, the employee shall notify their manager/supervisor of the concern. The concern shall be addressed before proceeding with the work.

Weather

The Safety Plan shall identify the weather conditions under which work will be allowed to proceed. In instances where work must proceed during adverse weather conditions, methods for protecting worker safety shall be documented in the Safety Plan and accepted by SSU managers and employees

In general, sustained winds above 20 miles per hour will be cause for work to stop.

Unique Conditions

Instructions unique to this worksite such as components, placement of systems, anchor points, areas where systems are particularly subject to damage, etc., shall be identified in the Site-Specific Fall Protection Plan.

Roof Edges

The exposed edges of the metal roof panels are sharp. Care must be taken to prevent injury due to contact with the metal edges.

Skylights

The skylights installed on the roofs are not guarded nor designed to support live loads. Proper fall protection measures are required when working within the vicinity of all skylights.

Tripping Hazards

Employees performing work on the roofs will be exposed to multiple tripping hazards due to the inherent construction of the roof and any utilities that may run in any of the valleys of the room. Tripping hazards shall be identified and reviewed by all employees working on the roofs.

Electrical Hazards

A specific Lockout/Tagout plan or procedure must be submitted prior to conducting any electrical work on the roof or on solar panels or their components.

Overhead Hazards

Anytime someone is working above someone else there is the possibility objects may be dropped. That object can be a tool, something that is being worked on, or debris. If the object falls it may cause significant damage or serious injury. Steps that can be taken to reduce injury and damage are:

- Ensure hardhats and safety boots are being worn by all employees above or below the work being performed.
- Mark off the area beneath the work with barricades, signs and caution tape.
- Keep tools and materials away from the edges of roofs, scaffolds or other raised surfaces so they are less likely to fall if bumped or dislodged.
- If prolonged work is being performed on a raised surface, toe boards, screens nets or similar protection will reduce the chances of objects being knocked off.

Implementation

Constant awareness of, and respect for, fall hazards and compliance with all safety rules are a primary consideration when working on Sonoma State University property. It is expected, all employees will follow the tenets of the SSU Roof Access Procedure and accompanying documents to ensure the safety of all affected employees.

The worksheets in the next section will guide managers and employees in designing a Fall Protection Safety Plan.

SONOMA STATE UNIVERSITY

SITE SPECIFIC FALL PROTECTION PLAN 2021

Fall Hazard Identification and Protection Selection Worksheet

On the table below, identify each fall hazard of 6 feet or more that exists or will exist during this maintenance/construction project and then select the protection method from the options identified below the table.

√	Hazard Type	General Location	Fall Protection Method	Staged Rescue Equip. Required (Y/N)	Overhead Protection Method
☐	Roof > 4/12 Pitch				
☐	Roof < 4/12 Pitch				
☐	Skylight Openings				
☐	Roof Openings				
☐	Floor Openings				
☐	Open-sided Floors				
☐	Leading Edge Work				
☐	Mobile Lift Work				
☐	Other _____				
☐	Other _____				

Fall Protection Methods: Select a fall protection method from the list below for each hazard identified above. Assembly and implementation instructions for the method(s) used are located elsewhere in this document. It is expected that the most protective method be used as is reasonably possible for the job.

☐ Standard Guardrails
☐ Warning Line System
☐ Warning Line & Safety Monitor
☐ Fall Arrest System
☐ Safety Net
☐ Positioning Belt
☐ Fall Restraint System
☐ Cover or Hatch
☐ Other: _____

Overhead Hazard Protection Methods: For each overhead hazard identified, specify the method(s) of protection for workers below. Refer to the "Overhead Protection" Section of this plan for any special installation instructions.

☐ Hard Hats & Safety Glasses Required
☐ Overhead Hazard Signs
☐ Debris Nets
☐ Toe Boards on Guardrails
☐ Screens on Guardrails
☐ Barricade to Control Access to Area
Other: _____
Other: _____

SONOMA STATE UNIVERSITY

SITE SPECIFIC FALL PROTECTION PLAN 2021

Fall Protection System Assembly and Maintenance

Fall protection systems (if utilized) will be assembled and maintained according to manufacturer's instructions when using a manufactured system. A copy of those instructions should be available on-site for reference. Any fall protection system used must meet Cal-OSHA regulations.

Standard Guardrails:

- Top rail shall be 42" to 45" above the work surface with midrails and toe board.
- Mid rail shall be halfway between top rail and floor.
- Toe board shall be not less than 3 ½-inches in height.
- **Rail Construction, wood:**
  - Top rail, hand rail, and posts shall be 2-inch by 4-inch.
  - Midrails shall be at least 1-inch by 6-inch.
- **Rail Construction, pipe:**
  - Top rail and midrails, and posts shall be minimum 1-1/2-inch nominal diameter, schedule 40.
- **Rail Construction, structural steel:**
  - Top rail, midrails, and posts shall be at least 2-inch by 2-inch by 1/4-inch angles.
- Posts shall be spaced not more than 6 feet apart.
- Top rail shall be able to withstand 200 pounds force in any direction.
- Mid rail shall be able to withstand 150 pounds force in any direction.
- When the 200-pound test load is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches above the walking/working level.
- Guardrails shall be inspected regularly for damaged or missing components.

Note: *A guardrail does not protect a person standing on a ladder, box, or other surface above the work surface.*

Post Material: _____ Rail Material: _____

Post Spacing (8' max): _____ Anchor Method: _____

Other Instructions: _____

Fall Arrest System:

Definition: A system used to arrest an employee in a fall from a working level consisting of (A) a fall arrest anchorage, (B) a full body harness, and (C) a fall arrest connecting device (lanyard, deceleration device, or lifeline).

- Anchor points must be capable of withstanding a 5000-pound shock unless a deceleration device in use limits fall to 2 feet, in which case a 3000-pound anchor point may be used.
- Full body harnesses shall be designed to distribute the fall-arrest forces over thighs, pelvis, waist, chest, and shoulders. Shall be equipped with a circle O-ring at the center of the wearer's back near shoulder level, or above wearer's head.
- Lanyards and vertical lifelines shall have a minimum breaking strength of 5000 pounds.
- Self-retracting lanyards shall limit free fall distance to 2 feet or less and shall be capable of sustaining a minimum tensile load of 3,000 pounds with the lifeline or lanyard fully extended.
- Ropes/Straps/Webbing of connecting devices shall be made of synthetic fibers except when in conjunction with hot work.

- System shall limit maximum arresting force on an employee to 1,800 pounds.
- Free fall may not exceed 6'nor contact any lower level.
- Where practicable, anchor end of lanyard shall be secured at a level not lower than the employee's waist.

- Maximum deceleration distance shall be limited to 3.5 feet.
- Lifelines must be placed or protected to prevent abrasion damage.
- Snap hooks may not be connected to each other, or to loops in webbing.
- Snap hooks shall be self-locking.
- Systems shall not be attached to hoists or guardrails.
- Inspect components for deformation, wear, and damage.
- Provisions shall be provided for prompt rescue of employees in the event of a fall.
- Relief Step Safety Devices are highly recommended for employees using fall arrest systems.

System Component List: _____

Anchor Point at this worksite: _____

Configuration and placement sketch attached? Yes ☐ No ☐

Method of Rescue: _____

Other Instructions: _____

Positioning Belt:

- Employees must not be able to fall more than 2 feet.
- The anchorage must be able to sustain 4 times the intended load.
- Restraint protection shall be rigged to allow the movement of employees only as far as the sides of the working level or working area.
- Snap hooks must not be connected to each other, or to loops in webbing.
- Snap hooks shall be self-locking.

System Component List: _____

Anchor Point at this worksite: _____

Other Instructions: _____

Fall Restraint Harness/Belt:

Anchor points:

- Must withstand 4 times the intended load or 3000 pounds, whichever is greater.
- Must ***always*** prevent a free fall from the work surface. (Several alternate anchor points may be necessary to achieve this requirement.)
- Inspect components for deformation, wear and damage.

System Component List: _____

Anchor Point at this worksite: _____

Configuration and placement sketch attached? Yes ☐ No ☐

Other Instructions: _____

Covers or Hatches must:

- Be able to support twice the weight of employees and equipment that would be on it at the same time or twice the maximum axle load of the largest vehicle that would cross it.
- Be secured to prevent accidental displacement.
- Be marked with the word “Cover” or “Hole”.

SONOMA STATE UNIVERSITY

SITE SPECIFIC FALL PROTECTION PLAN 2021

Material to use: _____

Other Instructions: _____

Warning Line Systems must:

- Block access to all fall hazards in the work area.
- Be placed 10 feet back from the edge.
- Be made of rope, wire, tapes or equivalent material and rigged and supported in such a way it is between 39" and 45" above the surface height.
- Be flagged at 6-foot intervals.
- Be marked with high visibility material.
- Be attached to stanchions such that pulling on one section of chain will not take up slack in the other sections.
- Minimum tensile strength of 200 pounds.
- Have stanchions that are able to withstand a 16-pound force applied horizontally at 30" high.

System Component List: _____

Configuration and placement sketch attached? Yes ☐ No ☐

Other Instructions: _____

Controlled Access Zones must:

- Meet the "Warning Line System" requirements described above, 10' to 25' back from the edge *plus the following when employees work between the fall hazard and the warning line ("control zone").*
- Have a competent person designated as "Monitor" who
  - Wears a high-visibility vest.
  - Is in visual and voice range of employees in the control zone.
  - Is on the same working surface
  - Has no other duties except watching, warning and directing employees regarding fall hazards.
  - Has a maximum of eight employees working in the control zone (all of whom also wear high-visibility vests and are easily distinguishable from the Monitor).

This system is not to be used in adverse weather conditions such as snow, rain, or high wind, nor after dark.

Monitor(s): _____

Control Zone Employees:

_____

_____

_____

_____

Other Fall Protection System: Provide a description of how the system is to be assembled, disassembled, operated, inspected, and maintained, including specifications for materials to be used in its construction:

_____

_____

_____

SONOMA STATE UNIVERSITY

SITE SPECIFIC FALL PROTECTION PLAN 2021

Emergencies and Injuries:

First Aid/CPR Trained Employee(s) On Site:

Name: _____ Title: _____

Name: _____ Title: _____

First Aid Kit Location(s): _____

Nearest Medical Facility: _____

Emergency Services Phone Numbers:

Medical: _____ Fire: _____ Police: _____

Location of Nearest Telephone: _____

If a crew member is injured at elevation, the supervisor will evaluate the employee's condition and administer first aid. A rescue plan must be included in this fall protection plan. Emergency services will be called in the event of a medical or fire emergency. If an injured employee can't return to ground level, the employee will be brought down to a lower level by emergency services. The following equipment is available on site to facilitate lowering/rescuing the injured worker:

Employee Training:

All employees must be instructed on the provisions of this plan and have been trained in the proper use of the fall protection equipment involved. By signing this document, the employees acknowledge they understand the plan and have been trained in the use of the equipment.

Name	Signature	Date

The competent person's signature verifies that the hazard analysis has been done, the employees informed of the plan's provisions and that employees have received training in the fall protection systems in use:

Name:	Signature:	Date:

SONOMA STATE UNIVERSITY

Roof Access Permit

This permit must be completed by entry personnel and receive EHS authorization prior to entry. Keep this permit at the worksite during operations. Return completed permit to EHS. If there are changes to the scope of work, hazards, and/or safeguards identified on an active Roof Access Permit, a new Roof Access Permit must be completed.

General Information		
Person(s) or Contractor Requesting Permit:		
Department and Building:		
Area of roof to be accessed (be specific – attach sketch/photos of roof and area of intended access):		
Task to be performed:		
Date(s) of access:	Start date & time:	End date & time:
Date of Pre-task planning meeting of Contractor (with FM Project Manager & EHS):		

Identification of Potential Hazards (check all that apply)		
☐ Low slope roof (4:12 or less)	☐ Asbestos	☐ Different levels of roof requiring access
☐ Steep slope roof (greater than 4:12)	☐ RF radiation (cell phone tower)	☐ Elevated mechanical equipment within 10 feet of perimeter edge
☐ Parapet wall less than 42 inches high	☐ Perimeter leading edge work	
☐ Skylights	☐ Roof openings (ladder openings, holes, etc.)	☐ Other: _____
☐ Controlled access zone	☐ Roof hatches within 10 ft. of perimeter edge	☐ Other: _____
☐ Roof assessment/evaluation issues	☐ Slippery when wet	☐ Other: _____

Safety Preparations (check all that apply)		
		Describe Safeguards and Actions Required
☐	Minimum of two persons performing work (required)	
☐	Radio communication to/from ground established (required)	
☐	Lighting provided for night work	
☐	Weather conditions safe	
☐	Falling object protection provided	
☐	Fall protection/work plan (required - must be attached)	
☐	Skylights, roof openings and holes covered or guarded with covers/guardrails meeting regulated strength	
☐	RF non-ionizing radiation hazard map	

SONOMA STATE UNIVERSITY

Roof Access Permit

☐	Safe work practices for mechanical equipment use reviewed	
☐	Hot work permit	
☐	Evaluate roof loading – added support required?	
☐	Other:	

Review/Access Authorization			
Important Note: Permit reviewer(s) cannot be the person(s) accessing the roof.			
	Name	Signature	Date
SSU Facility Management (Project Manager/Supervisor)			
Contractor supervisor/manager (of contracted employees who will access roof)			
Dept of Environmental Health & Safety			
Permit Expires: Date: _____ Time: _____			

Employee(s) have reviewed the Fall Protection Plan and Permit		
Name (print)	Signature	Date

Post this permit at the entrance to the roof.