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**THE UNIVERSITY OF MAINE  
FALL PROTECTION SAFETY PROGRAM**

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## **1. Overview**

The purpose of the UMaine Fall Protection Safety Program is to establish written procedures to protect all employees and students engaged in work activities on campus or at its remote facilities where they are exposed to potential falls from an elevated location. The UMaine Fall Protection Safety Program complies with established OSHA regulations and describes the responsibilities and procedures where employees are exposed to fall hazards of four (4) feet or greater. The program also encompasses construction-related job tasks where employees are exposed to a fall hazards of six (6) feet or greater. This program describes how the University of Maine will comply with OSHA Fall Protection Standards detailed in 29 CFR 1910.23, 29 CFR 1910.27, 29 CFR 1910 Subpart F, Powered Platforms, Man lifts, and Vehicle-mounted Work Platforms, 29 CFR 1926 Subpart L, Scaffolds, 29 CFR 1926 Subpart M, Fall Protection & 29 CFR 1926 Subpart P, Excavations.

## **2. Program Administration and Responsibilities**

### **2.1 Safety and Environmental Management**

- Develop, maintain, and periodically review the written UMaine Fall Protection Safety Program;
- Provide guidance and technical assistance to departments regarding the UMaine Fall Protection Safety Program;
- Maintain a copy of all Fall Protection Plans; and,
- Conduct periodic audits of UMaine departments where employees are exposed to potential fall hazards and are required to participate in the UMaine Fall Protection Safety Program.

### **2.2 Area Supervisors**

- Identify locations and activities where potential for fall hazards exist;
- Ensure that personnel who participate in the UMaine Fall Protection Safety Program receive the appropriate training;
- Ensure that all required fall protection equipment is provided and properly maintained;
- Ensure that fall protection equipment and systems are inspected per regulatory and manufacturer's requirements and that these inspections are properly documented;
- Remove from service any fall protection equipment that is in poor condition or unsafe;
- Designate a competent person when a fall protection system is required; and,
- Address and correct any potential fall hazard brought to their attention by an employee.

### **2.3 Competent Person**

- Obtain the UMaine competent person certification through your supervisor;
- Recognize and properly assess the fall hazards of the work site;
- Develop the appropriate procedures for erecting, maintaining, disassembling, and inspecting fall protection systems;

- Conduct inspections of the work site as necessary to identify potentially hazardous conditions;
- Take immediate corrective action and/or terminate the work project if an unabated fall hazard is observed during a work project;
- Report to the supervisor, and any other designated person within the department, any employee or student who does not comply with the fall protection program endangers themselves or other personnel, or may be causing a safety hazard to other persons in the work area;
- Develop a Fall Protection Safety Plan in accordance with the UMaine Fall Protection Safety Program, only if the UMaine employees are engaged in leading edge work, pre-cast concrete erection work, or residential construction work and if the fall protection equipment creates a greater hazard or is infeasible to install and submit it to SEM; and,
- Communicate with contractors on all joint responsibility job sites to ensure that employees are protected from potential fall hazards.

## **2.4 UMaine Employees**

- Become familiar and comply with the requirements of the Fall Protection Program prior to performing activities covered by the program;
- Attend Fall Protection Training to become a competent person and/or ensure certification as a competent person prior to implementing a fall protection system for a job task;
- Inform the supervisor if not provided with appropriate fall protection training or equipment required for the job;
- Report to the area supervisor any problems observed which could compromise health and safety;
- Maintain personal fall protection equipment in a safe operating condition;
- Conduct visual inspection of the fall protection equipment and report any defective or suspected defective equipment to the supervisor; and,
- Properly document inspections of fall protection equipment.

## **2.5 Contractors**

- UMaine Project Managers will obtain Fall Protection Safety Plans from contractors.

## **3. Hazard Identification**

The area supervisors and/or competent person will conduct a hazard assessment of the work site prior to the start of project. If a potential fall hazard is identified, the supervisor and/or competent person will determine if engineering controls can eliminate the identified fall hazard. When engineering controls cannot be implemented to control a fall hazard and/or not feasible, the supervisor and/or competent person will implement the appropriate fall protection system.

### **3.1 Hazard Assessment of Non-Construction Related Work Activities**

UMaine employees and students performing work activities will be protected from potential fall hazards of four (4) feet or greater. Every open-sided floor, platform, or mezzanine that is four (4)

feet or greater above the adjacent floor or ground level will be guarded by a permanent guardrail system (section 4.1) on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder. Holes in walking / working surfaces and wall openings will be covered or protected to prevent personnel falling through. Every flight of stairs with four (4) or more risers will have standard stair railings or standard handrails.

### **3.2 Hazard Assessment of Construction Related Work Activities**

UMaine employees and students performing construction related work activities will be protected from potential fall hazards of six (6) feet or greater through the implementation of a fall protection system, only if engineering controls will not eliminate the fall hazard. The supervisor and/or competent person on each jobsite will be responsible for identifying the potential fall hazards and implementing the appropriate fall protection system to eliminate the exposure to the fall hazards.

The supervisor or competent person is allowed to perform an inspection, investigation, or assessment of the workplace conditions prior to the actual start of construction work or after all construction work has been completed, providing it is done in a safe manner.

## **4. Engineering Controls**

If the hazard assessment identifies a potential fall hazard, the supervisor and/or competent person will determine if that hazard can be eliminated through engineering controls or other alternative work methods. An engineering control can either be temporary or permanent, but must be able to prevent an employee or student from being exposed to the fall hazard.

### **4.1 Permanent Guardrail Systems**

All permanent guardrails will be installed in accordance with 29 CFR 1910.23. It will consist of a smooth-surfaced top rail with a vertical height of 42 inches measured from the upper surface of the rail to the walking / working surface. A mid rail will be install approximately  $\frac{1}{2}$  the distance between the top rail and the walking / working surface. A 4 inch, standard toe board with no more than  $\frac{1}{4}$  inch clearance above the walking / working surface will be securely attached to the guardrail if stored material could fall to a level below injuring an employee.

Permanent guard-rail systems will be constructed from appropriate materials and be able to withstand a 200 pound force applied in any direction at any point on the top rail. Permanent guardrail systems will be designed to meet all life safety and residential codes that apply.

### **4.2 Construction-related/Constructed Guardrail Systems**

A guardrail system may be constructed at a work site to prevent employees from being exposed to potential fall hazards. All guardrail systems are required to be constructed to meet a minimum criteria established by OSHA. When a guardrail system does not effectively eliminate the fall hazard such as an employee reaching through the guardrail to perform a task, alternative fall protection must be provided. All guardrail systems will meet the following criteria.

#### 4.2.1 Top Rails

1. The top rail must be 42 inches plus or minus 3 inches above the walking or working level.
2. When employees are using stilts, the height of the top rail will be increased an amount equal to the height of the stilts.
3. Wire ropes used as a top rails must be at least 1/4" nominal diameter or thickness to prevent cuts and lacerations.
4. Wire rope used as a top rail will be flagged at not more than 6 foot intervals with high visibility material.
5. Steel or plastic banding may not be used as a top rail.
6. Manila, plastic or synthetic rope being used as a top rail will be inspected as frequently as necessary to ensure that it continues to meet the strength requirement listed below.

#### 4.2.2 Mid Rails

1. A mid rail must be installed at a height midway between the top rail and the walking working surface (i.e. approximately 21 inches from walking / working surface).
2. Alternative structural members can be used in place of a mid rail.
  - a. Screens and mesh will extend from the top rail to the walking / working surface along the entire length of the guardrail system.
  - b. Intermediate vertical members, such as balusters, must not be more than 19 inches apart.
3. A mid rail or alternative structural members are not required if a wall or parapet wall that is 21 inches or greater is present and incorporated into the guardrail system.
4. Steel or plastic banding may not be used as a mid rail.
5. Manila, plastic or synthetic rope being used as a mid rail will be inspected as frequently as necessary to ensure that it continues to meet the strength requirement listed below.

#### 4.2.3 Construction Material

1. Wood guardrail systems top rails and vertical posts will be constructed from at least 2" x 4" construction grade lumber. The vertical post will be spaced no more than 8 feet apart. Mid rails will be constructed from at least 1" x 6" construction grade lumber.
2. Guardrail systems (top rails, mid rails, & posts) constructed from pipe will be schedule 40 and have a diameter of 1 1/2 inch or greater. Vertical posts will be spaced no more than 8 feet apart.
3. Guardrail systems (top rails, mid rails, & posts) constructed from structural steel will be at least 2" x 2" x 3/8" angles with posts spaced no more than 8 feet apart.

#### 4.2.4 Forces

1. Guardrail systems will be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top rail in any outward or downward direction.
  - a. When a 200 pound force test is applied, the guardrail will not deflect to a height less than 39 inches above the walking / working surface.
2. Mid rails, screens, mesh, or intermediate vertical members must be capable of withstanding a force of at least 150 pounds applied in a downward or outward direction.

#### 4.2.5 Additional Requirements

1. Guardrails must have a smooth surface to prevent injury to an employee from punctures or lacerations, and snagging clothes of clothes.
2. The ends of all guardrails must not overhang the terminal posts, except where such overhang does not constitute a projection hazard.
3. When guardrail systems are used at hoisting areas, a chain, gate, or removable guardrail section will be placed across the access opening between the guardrail section when hoisting operation are not in progress.
4. Guardrail systems will be installed on all unprotected sides or edges of a hole.
  - a. When guardrail systems are used around holes which are used as points of access, such as in ladder ways, a gate will be provided or the guardrail system will be offset so that a person cannot walk directly into the hole.

#### 4.2.6 Protection from Falling Objects

Supervisors and/or the competent person are required to protect employees from materials falling from above. When an employee is required to work in an area where this potential hazard could exist, the supervisor and/or competent person will require the employee to wear a hard hat. In addition, engineering controls or other alternative work methods will be implemented.

When guardrail systems are used to prevent materials from falling from one level to another, any openings must be small enough to prevent passage of potential falling objects. Toe boards will be constructed to withstand a force of at least 50 pounds and be at least 3 ½ inches high. The toe board will not have more than ¼ inch clearance above the walking / working surface.

No materials or equipment except masonry and mortar are to be stored within 4 feet of working edges. Excess mortar, broken or scattered masonry units, and all other materials and debris will be kept clear of the working area by removal at regular intervals. During roofing work, materials and equipment must not be stored within 6 feet of a roof edge unless guardrails are erected at the edge, and materials piled, grouped, or stacked near a roof edge must be stable and self-supporting.

A canopy structure, strong enough to prevent penetration by any falling object may be erected to protect the employees working below. Alternatively, the area may be cordoned off and all employees will be prohibited from entering the barricaded area until it is safe.

#### 4.3 Covers

Covers located in roadways and vehicular aisles must be able to support at least twice the maximum axle load of the largest vehicle to which the cover might be subjected. All other covers must be able to support at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time. To prevent accidental displacement resulting from wind, equipment, or workers' activities, all covers must be secured to prevent movement. All covers must be color coded or bear the markings "HOLE" or "COVER."



## 5. Fall Protection Systems

### 5.1 Safety Net Systems

Safety nets systems, while an available fall protection system option, are rarely used at UMaine and are generally not recommended. A request for use of safety net systems must be reviewed by an SEM competent person in conjunction with the department's work site competent person before use.

### 5.2 Personal Fall Arrest Systems

The minimum components that make up a personal fall arrest system at UMaine consist of a full-body harness, lanyard, and anchor point. Additional recommended components include a deceleration device and lifeline. *The use of a body belt as a personal fall arrest system is prohibited.* All personal fall arrest equipment will be specifically designed for that purpose and will meet or exceed the requirements listed below.

#### 5.2.1 Personal Fall Arrest System Requirements

- Employees using a personal fall arrest system will have a combined body and tool weight of less than 310 pounds.
- If an employee using a personal fall arrest system has a combined body and tool weight of 310 pounds or more, a competent person may modify the system to meet the requirements of this section provided it is done in accordance with the fall arrest equipment manufacturer's instructions, recommendations, and warnings regarding limitations.
- Personal fall arrest systems must limit the maximum arresting force on an employee to 1800 pounds and limit the free fall distance to 6 feet with a deceleration distance of 3.5 feet.
- Personal fall arrest systems must have sufficient strength to withstand twice the potential impact energy of an employee a distance of 6 feet.
- Personal fall arrest systems subjected to impact loading due to a fall or other stress must be immediately removed from service and destroyed.
- All personal fall arrest equipment must be inspected prior to each use for excessive wear, damage, and other deterioration as per the manufacturer's instructions. All defective equipment will be removed from service.
- Personal fall arrest equipment must not be used to hoist materials.
- Employees must not attach personal fall arrest system to guardrail systems or hoists.

#### 5.2.2 Full-Body Harness

- Only a full-body harness, constructed from synthetic fibers, will be used when implementing a personal fall arrest system.
- The attachment point for a full-body harness will be a dorsal connection located in the center of the wearer's back near shoulder level.
- Work positioning devices may be attached to points located on the sides and/or front of the harness.

### 5.2.3 Connecting Devices (lanyards, lifelines and D-rings)

- All connectors must be made from drop forged, pressed, formed steel or equivalent materials. They will be corrosion resistant and all surfaces and edges will be smooth to prevent damage to interfacing parts.
- Only locking snap hooks will be used.
- D-rings and snap hooks will have a minimum tensile strength of 5000 pounds and be proof tested to a minimum tensile load of 3600 pounds without cracking, breaking, or deforming.
- Lanyards and vertical lifelines must have a minimum breaking strength of 5000 pounds and be constructed from synthetic fibers.
- Lanyards and lifelines must be protected from abrasions or cuts.
- Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less must have a tensile strength of at least 3000 pounds.

### 5.2.4 Anchorage Points

Anchorage points used to attach personal fall protection equipment must be capable of supporting 5000 pounds per employee attached or be designed and installed with a safety factor of at least two.

- Anchorage points may not be used for any other purpose when being used as part of a personal fall arrest system.
- Site designed and installed anchorage points will be designed and installed by a qualified person.
- Manufacturer designed anchorage points must be installed in accordance with the manufacturer's requirements including instructions, recommendations, and warnings on limitation of use. A competent or qualified person must review the installation of manufacturer designed anchorage points.
- Permanent anchorage points will be properly labeled.
- Competent persons are permitted to make assessments of improvised anchorage points based on sound engineering principles.

### 5.3 Positioning Device Systems

A positioning device system is designed to allow an employee to be supported on an elevated vertical surface, and work with both hands free while leaning. It is not a substitute for a personal fall arrest system and will be designed so that an employee cannot free fall more than 2 feet. Anchoring points will be capable of supporting at least twice the potential impact load of an employee's fall or 3000 pounds. Employees will be required to use a full-body harness as part of the positioning device system.

### 5.4 Controlled Access Zone

A controlled access zone is a work area clearly designated in which leading edge work and similar operations may take place without the use of conventional engineering controls or fall protection systems to protect the employees working within the zone. Controlled access zones are used to prevent all other employees from entering these work areas.

Controlled access zones, when created to limit entrance to areas where leading edge work and other operations are taking place, must be defined by a control line or by any other means that restrict access. Control lines will consist of ropes, wires, tapes or equivalent materials, and supporting stanchions, and each must meet the following requirements.

- Flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- Rigged and supported in such a way that the lowest point is not less than 39 inches from the walking/working surface and the highest point is not more than 45 inches.
- Strong enough to sustain stress of not less than 200 pounds.
- Control lines will extend and be approximately parallel along the entire length of the unprotected or leading edge connecting on each side to a guardrail system or wall.
- Control lines will be erected not less than 6 feet or more than 25 feet from the unprotected or leading edge (except for pre-cast concrete work).

## 5.5 Warning Line System

A warning line system may only be implemented when employees are involved in low-sloped roofing activities as long as it is used in combination with another fall protection system or as part of a Designated Area in accordance with Appendix B. Warning line systems may also be used in accordance with a fall protection plan as described in Section 11. Warning line systems consist of ropes, wires, or chains attached to supporting stanchions that meet the following requirements.

- The warning line system will be erected around all sides of the roof work area and be flagged at not more than 6-foot intervals with high-visibility material.
- The warning line system will be rigged and supported so that the lowest point 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.
- The warning line will have a minimum tensile strength of 500 pounds.
- Stanchions will be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking/working surface, perpendicular to the warning line and in the direction of the floor, roof, or platform edge
- When mechanical equipment is being used, the warning line will be erected not less than 6 (6) feet from the roof edge which is parallel to the direction of mechanical equipment operation and not less than ten (10) feet in the perpendicular direction. For designated areas described in Appendix B the requirement is not less than ten (10) feet in all directions.
- When no mechanical equipment is being used, the warning line will be erected not less than 6 feet from the roof edge.
- No employee will be allowed in the area between the roof edge and a warning line unless the employee is performing roofing work.
- Work in Designated Areas must be approved by the Department Competent Person and a list of designated areas for work on roofs must be submitted to SEM.

## 5.6 Safety Monitoring System

A safety monitoring system is a fall protection system that utilizes a competent person as a safety monitor to recognize potential fall hazards and is responsible for warning any employee who is working in an unsafe manner or is unaware of a potential fall hazards. No worker, other than one engaged in roofing work (on low-sloped roofs) or one covered by a fall protection plan, are allowed in an area where an employee is being protected by a safety monitoring system. The safety monitor is positioned on the same walking/working surface as the other employees on the job site and must be able to orally communicate with all employees under their responsibility. The safety monitor will not be assigned any other work responsibilities that could distract from monitoring the employees on the job site.

Mechanical equipment will not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-sloped roofs. All workers in a controlled access zone must be instructed to promptly comply with fall hazard warnings issued by safety monitors.

## 6. Roofing Work

Roofing work is defined as 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. Fall protection requirements vary depending on the slope of the roof.

### 6.1 Low-sloped Roofs

Employees engaged in roofing activities on low-sloped roofs (slope less than or equal to 4 in 12) with unprotected sides and edges more than 6 feet above lower levels must be protected by the use of the guardrail systems, safety net systems, personal fall arrest systems. Alternatively, employees may be protected by the following methods when engaged in roofing activities.

- Warning line system and guardrail system
- Warning line system and safety net system
- Warning line system and personal fall arrest system
- Warning line system and safety monitoring system

On low-sloped roofs fifty (50) feet or less in width, the use of a safety monitoring system alone is permitted.

### 6.2 Steep Roofs

All employees performing construction-related work activities on a steep roof (slope greater than 4 in 12) with unprotected sides and edges 6 feet or greater above lower levels must be protected from falling by guardrail systems with toe-boards, safety net systems, or personal fall arrest systems.

## 7.0 Scaffolding

Employees conducting work activities on scaffolding that is erected at a level that is greater than ten (10) feet above a lower level must be protected from falling by implementing a guardrail system, personal fall arrest system, or both depending on the type of scaffolding. The scaffolding requirements of 29 CFR 1926 Subpart L applies to scissor lifts.

A guardrail system will be installed along all open sides and ends of the scaffold in order to provide adequate protection. The guardrail system will meet all requirements described in section 4.2 of the UMaine Fall Protection Safety Program. Guardrail systems are not required on the front edge of the scaffold when:

- The front end of all platforms are less than 14 inches from the face of work;
- The outrigger scaffolds are 3 inches or less from the front edge; and
- Employees are plastering and lathing 18 inches or less from the front edge.

Personal fall arrest systems will be used when the scaffolding's guardrail system does not meet the requirements described in section 4.2 of the UMaine Fall Protection Safety Program. Personal fall arrest system used on scaffolding will be attached by a lanyard to a vertical lifeline, horizontal lifeline, or scaffolding structural member approved by a competent person.

A personal fall arrest system and guardrail system will be used when working on a single-point adjustable scaffold, two-point adjustable scaffold, or a self-contained scaffold that are supported by ropes.

All employees required to perform work activities while using scaffolding are required to receive training on how to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. In addition, employees will be required to receive the training described in section 12.3.

## 8. Aerial Lifts, Vehicle-Mounted, Elevating & Rotating Work Platforms, and Powered Platforms

### 8.1 Aerial Lifts and Vehicle-Mounted Elevating & Rotating Work Platforms

This section describes the use of all aerial devices that are vehicle-mounted equipment that have telescoping and/or articulating boom platforms designed to position personnel in elevated locations (29 CFR 1910.67 & 29 CFR 1926.453). This section does not pertain to scissor lifts (see section 7.0). All employees that operate an aerial device are required to always stand firmly on the floor of the basket and use a personal fall arrest system as described in section 5.2. Field modifications to aerial lifts and vehicle-mounted elevating & rotating work platforms are prohibited. Only trained employees, proficient in the operation, safe use, and inspection of the particular aerial device are allowed to operate this equipment. In addition, employees will be required to receive the training described in section 12.3.

## **8.2 Powered Platforms**

This section covers powered platform installations permanently dedicated to interior or exterior building maintenance of a specific structure or group of structures. This section does not apply to suspended scaffolds (swinging scaffolds) used to service buildings on a temporary basis and covered under subpart D of 29 CFR 1910, nor to suspended scaffolds used for construction work and covered under subpart L of 29 CFR 1926. Building maintenance includes, but is not limited to, such tasks as window cleaning, caulking, metal polishing and re-glazing.

Employees working on powered platforms must be protected by a personal fall arrest system as described in section 5.2. Only trained employees, proficient in the operation, safe use, and inspection of the particular powered platform are allowed to operate a powered platform. In addition, employees will be required to receive the training described in section 12.3.

## **9. Fixed Ladders**

Personal fall arrest systems or positioning device systems are required for all employees ascending or descending a fixed ladder over 20 feet in unbroken length, if the fixed ladder does not have a cage or landing platform(s) that meets the requirement detailed in 29 CFR 1910.27. Employees using a personal fall arrest or positioning device system to ascend or descend a fixed ladder are required to receive the training described in section 12.3.

## **10. Excavations**

Each employee at the edge of an excavation or trench 6 feet or greater in depth must be protected from falling by a guardrail system, fence, barricade, or cover. Where walkways are provided to permit employees to cross over an excavation or trench 6 feet or greater in depth, guardrails are required on the walkway (refer to UMaine Trenching & Excavation Safety Program for details).

## **11. Fall Protection Plan**

Supervisors who have employees engaged in leading edge, pre-cast concrete erection, or residential construction work activities and can demonstrate that it is infeasible or it creates a greater hazard to use conventional fall protection equipment must develop and implement a fall protection plan. This fall protection plan will be prepared by a qualified person and developed specifically for the work site. Each fall protection plan will be submitted to SEM prior to the implementation of the plan. Fall protection plans will:

1. be maintained at the job site;
2. be implemented under the supervision of a competent person;
3. be reviewed with all employees that are covered under the plan;
4. document the reason why the use of conventional fall protection systems are infeasible or why their use would create a greater hazard;
5. include a written discussion of other measures that will be taken to reduce or eliminate the fall hazards at the work site;

6. identify each location where conventional fall protection methods cannot be used and be classified as control access zones as described in section 5.4; and,
7. implement a safety monitoring system as described in section 5.6.

## **12. Training Certification and Requirements**

Each employee who might be exposed to a fall hazard at UMaine or its remote facilities must be trained. Because of the diversity of the campus and its remote facilities, UMaine has categorized the Fall Protection Safety training needed to educate and inform an employee who might be exposed to a fall hazard as it relates to their job assignment.

### **12.1 Fall Protection Competent Person Certification**

A fall protection competent person is an individual designated by the Area Supervisor who is capable of identifying potential fall hazards related to a job site and implement the appropriate measures to protect the employees from the these hazards. A person is designated as competent based on their experience and/or training. A competent person is knowledgeable of applicable standards and the design and the use and construction of fall protection systems. He/she has the authority to take appropriate actions and will be capable of conducting fall protection training described in section 12.2 and 12.3.

### **12.2 Fall Protection Systems Training**

This training is required for all employees required to conduct work activities where they might be exposed to a fall hazard and may be utilizing any of the fall protection systems described in section 5.0. This training will be performed by a competent person and include:

- nature of the fall hazards associated with the type of work being performed;
- correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems that will be used;
- the use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones that will be used;
- the role of each employee in the safety monitoring system when this system will be used;
- the limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs;
- the correct procedures for the handling and storage of equipment and materials, and the correct procedures for the erection of overhead protection; and,
- roles of employees in the fall protection system utilized.

### **12.3 Personal Fall Arrest System Training for Special Applications**

This training is required for all employees that are required to use a personal fall arrest system when they are conducting work activities where a full body harness is required. These activities include: working with or on a scaffold, aerial lift and vehicle-mounted elevating and rotating work platform,

powered platform, and fixed ladder. This training will be performed by a competent person and include:

- Nature of fall hazards in the work area;
- The use and operation of the personal fall arrest system, including a demonstration of donning and fitting of the full-body harness;
- How to properly inspect the personal fall arrest system components and what to do if a defect is discovered;
- How to properly clean, maintain, and store the personal fall arrest equipment;
- What to do if an emergency occurs; and,
- How to document inspections of personal fall arrest system components.

#### **12.4 Additional Training**

When the UMaine supervisor has reason to believe that an employee who has already been trained on fall protection systems does not have the understanding and skill required to conduct such operations, retraining will be required. Retraining will also be required when:

1. changes in the workplace render previous training obsolete;
2. changes in the types of fall protection systems or equipment to be used render previous training obsolete; or
3. inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

#### **12.5 Written Training Certification**

Supervisors are required to document and maintain all fall protection training records for the employees within their department. The written certification record will contain the name of the employee, date of the training, signature of the person conducting the training, and title of the training class.

### **13. Emergency Rescue**

In the event of a fall while an employee is using a personal fall arrest system or a safety net system, it is imperative that immediate rescue and retrieval procedures are implemented. To prevent further harm to the employee, all affected employees must know how to respond quickly and accordingly. UMaine employees will respond in the following manner:

1. Immediately call 911 or 581-4040 to notify UMaine Public Safety Dispatch of the incident. They will notify the University Voluntary Ambulance Corp (UVAC) and the Orono Fire Department.
2. Perform any rescue services as long as it does not endanger other employees or cause greater injury to the employee that requires rescuing.



## **14. Audits**

The Department of Safety and Environmental Management will conduct periodic audits of UMaine Departments that conduct work activities requiring the implementation of a fall protection system. All audit will be documented and maintain on file in the Department of Safety and Environmental Management.

## **APPENDIX A**

### **Definitions**

<b>Active Fall Protection</b>	Made up of components and systems that require some manipulation by the workers to make the protection effective. All active systems begin with an anchorage point (the position to which the fall arrest system or lanyard is securely attached) and have some connecting components to the worker.
<b>Competent Person</b>	One who is thoroughly trained in the Fall Protection Program, related standards, and is capable of identifying existing and predictable hazards in surroundings dangerous to workers, and who has authorization to take prompt corrective measures to eliminate them.
<b>Controlled Access Zone</b>	An area in which certain work (e.g., overhand bricklaying) may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.
<b>Designated Area</b>	A space which has a perimeter barrier erected to warn employees when they approach an unprotected side or edge, and serves also to designate an area where work may be performed without additional fall protection.
<b>Exposed Area</b>	Any area that creates a hazard to individuals or personnel below the individual's working level.
<b>Fall Protection</b>	A motion-stopping safety system that will prevent workers from experiencing disastrous accidental falls from or on a surface of 6 feet or greater in height. Fall protection systems may be active or passive.
<b>Flat Roof</b>	A roof with a slope from horizontal of 10 degrees or less.
<b>Guardrail</b>	A rail secured to uprights and erected along the exposed sides and ends of platforms.
<b>Low-Slope Roof</b>	A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).
<b>Lower levels</b>	Those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.
<b>Mechanical equipment</b>	All motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mop carts.
<b>Mid rail</b>	A rail approximately midway between the guardrail and the platform, secured to uprights erected along the exposed sides and ends of platforms.
<b>Opening</b>	A gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide, in a wall or partition, through which employees can fall to a lower level.

<b>Passive Fall Protection</b>	Consists of components and systems, such as nets that do not require any actions on the worker's part.
<b>Personal Fall Arrest System</b>	A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.
<b>Personal Protective Equipment</b>	Equipment designed and manufactured to protect workers from potential hazards in the work environment, most effective when worn properly. Examples are, but not limited to: Safety harnesses, life lines, lanyards, rope grabs, gloves, safety glasses, hard hats, and safety nets.
<b>Roof</b>	The exterior surface on the top of a building. This does not include floors or formwork which, because a building has not been completed, temporarily become the top surface of a building.
<b>Safety Monitoring System</b>	A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.
<b>Sanitary</b>	Characterized by or readily kept in cleanliness or good housekeeping
<b>Scaffold</b>	Any temporary elevated platform and its supporting structure used for supporting workers, materials, or both.
<b>Steep Roof</b>	A roof having a slope greater than 4 in 12 (vertical to horizontal).
<b>Toe-board</b>	A barrier secured along the sides and ends of a platform to guard against falling material.
<b>Unsanitary</b>	Characterized by or readily kept in uncleanness
<b>Warning Line System</b>	A system that includes stanchions and line (rope/wire/chain) that meet the requirements of the proposed 29CFR1910.28(d)(2)-(4) presented as "Appendix C". When used as part of a Designated Area the warning line must be at least ten (10) feet for any fall hazard four feet or more.
<b>Working Load</b>	Loads imposed on structures by workers, materials, and equipment.

## APPENDIX B

### Requirements for the Use of Designated Areas

**University of Maine (UMaine) Facilities Management (FM) employees** who perform work on **flat** roofs [*a slope from horizontal of 10 degrees or less*] that is not part of either a construction activity or roofing activity may perform work in Designated Areas without the use of additional personal fall protection equipment or a safety monitor if all the provisions of this appendix are met.

**When feasible: tasks to be performed within a Designated Area should be assigned to a crew of two or more.**

1) The area is listed in the Designated Area Inventory maintained by Safety & Environmental Management (SEM). The inventory will list the building, the work area assessable and the Responsible Department.

To be listed in the SEM Designated Area Inventory:

- Roof hatches / scuttle holes must have a cover capable of supporting the weight of the employee plus any tools & equipment they may carry (300lbs.) or be surrounded by gate/guardrails.
- A Warning Line System must be installed, inspected and maintained according to the manufacturer's recommendations and the proposed 29CFR1910.28(d).
  - The Warning Line must be at least ten (10) feet from the edge of any fall hazard four (4) feet or more.
    - Work areas and portions of access paths less than ten (10) feet from the edge require guardrails or the use of personal fall arrest equipment.
    - A drawing posted by the Responsible Department indicating the Designated Area with the location of warning lines, guardrails and access pathway posted at the access point.
  - For buildings where FM is the Responsible Department for maintenance tasks the area will be reviewed by a FM fall protection competent person and complete the assessment form. For structures at remote sites where FM does not provide rooftop maintenance services, the area must be reviewed by the SEM Fall Protection Program Responsible Person. The competent person assessment shall include a determination that the warning line and / or guardrail system meets the requirements of the proposed 29CFR1910.28(d)(2) thru (d)(5) except that the minimum distance from the line to the edge shall not be less than ten (10) feet.

2) The employee **must** be trained as a competent person in fall protection including the recognition of fall hazards by a fall protection competent person and documented by the Responsible Department. The trained employee shall assess the walking surfaces prior to stepping onto the surface **AND** continue assessment while in the Designated Area or access pathway.

- Assessment should include but not limited to such factors as
  - Warning line system appears intact, is located as shown in the posted drawing and that in combination with any guardrails forms a completely enclosed perimeter.
  - Any contaminant or material on the surface such as loose debris, grease, ice, snow, rain, dew, condensation or any other moisture that might make the surface slippery and invoke the need of additional fall protection.
  - Weather conditions that might increase the possible fall hazard such as fog, wind or glare.

3) The work must be temporary in nature – such as maintenance of roof top equipment.

4) At no time will any employee perform work or work-related activity is to take place in the area between the warning line and the edge.

5) Roof hatches, scuttle holes covers or gated guardrails must be closed as soon as possible after the employee has entered the Designated Area or access pathway.

6) During 'normal business hours' (M-F, 7am-4:30pm) , FM employee's shall notify Work Control immediately prior to

entering the Designated Area at the start of the task and after completing the task whole or in part such that the employee does not anticipate re-entering the Designated Area again during their current work shift. Entry/Exit notifications will be called to University of Maine Public Safety when work in Designated Areas is performed during other times such as part of a call-back task.

**Appendix B**  
**Designated Area Evaluation Form**

Building:		Competent Person:			
Location:		Department:			
		Assessment Date:			
			<b>Yes</b>	<b>No</b>	<b>N/A</b>
Can all maintenance work be performed while inside of warning lines at least ten (10) feet from any fall hazard [four (4) feet or more OR ANY distance over dangerous equipment] OR are there guard rails surrounding work areas?					
If access is from the building interior, is there a diagram showing the Designated Area boundaries and signage concerning training & notification procedures at the access point?					
Is the access pathway and work area bounded by warning lines when ten (10) feet or more from an unprotected edge OR guardrails on all sides of the roof? Note: if access is by ladder to a perimeter edge and not through a hole, the point where the employee steps from the ladder to the working surface does not require a guardrail if not part of the work area.					
Does the warning line have highly visible flags approximately every six (6) feet and the line is between 34"-39" above the surface AND capable of with standing a sixteen (16) pound horizontal force without tipping over?					
If access is through a roof hatch or scuttle hole, is the opening corralled with rail and/or gate OR the closed covering capable of supporting 300 pounds?					
Comments ( special considerations / other observed hazards):					

IF ALL THE ABOVE ARE ANSWERED EITHER "YES" or "NA", submit this form and a diagram showing: access point; access walkways; and, the work areas bounded by warning lines and/or guardrails to SEM for inclusion in the "Designated Areas Inventory."