# Dickinson College

# Fall Prevention Plan

**FALL PREVENTION**
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# I. INTRODUCTION

Dickinson College realizes our responsibility for the protection of our employees. We hereby institute the enclosed Fall Protection Program. The Fall Protection Program in accordance with OSHA 29 CFR 1910 and 1926" establishes basic safety principles and work practices that are capable of protecting employees who are performing work above 4 feet for General Industry Tasks and 6 feet for Construction Tasks at Dickinson College. This document is intended only to highlight those safety measures necessary for achieving a safe and healthy work environment. Where the scope of hazards is not adequately addressed by this general document, the workplace supervisor must develop specific Standard Operating Procedures.

## A. Scope and Application

All employees of Dickinson College performing work with a fall potential of greater than 4 feet must comply with this document.

## B. Responsibilities

1. **The President of the College** has ultimate responsibility for safety within the institution. General oversight responsibility is assigned to the **Vice President for Campus Operations**.
2. **The Director of Environmental Health & Safety** advises on matters of material safety policies and practices and:
    - Works with administrators and other employees to develop and implement the appropriate safety policies and practices, including assisting supervisors in writing standard operating procedures.
    - Conducts information and general training sessions.
    - Maintains a resource file of references and publications on safety matters
    - Assists with the investigation of accidents.
    - Seeks ways to improve the safety plan.
    - Annually reviews the Fall Protection Program
    - Conducts safety audits

3. **The Workplace Supervisor** is the administrator or staff member under whose instruction fall protection is required. The supervisor has a primary responsibility for implementing the Fall Protection Program in the workplace and:
    - Ensures workers know and follow the Fall Protection Guidelines
    - Ensures that training has been provided.
    - Ensure that guardrails are used when practicable
    - Ensures all equipment is safe, maintained, inspected and used correctly.

- Ensures that the required level of personal protective equipment is available, in working order, and that specific training in its use has been provided.
- Investigates accidents and make recommendations to prevent reoccurrence.
- Actively seeks suggestions for improvement from workers.
- Keeps a log of all workers trained for the Fall Protection Operations and topics that were covered before they work in the area.
- Ensures all workers have access to a copy of the Fall Protection Safety Guidelines.
- Observes workers, work practices and site operations and makes corrections when necessary.
- Enforces the program.
- Ensure the program is prepared for each site
- Ensure a written worksite specific fall protection plan is in place when needed.

4. **The Fall Protection Employee** must be alert to and aware of the hazards of working at different heights and
   - Know the Fall Protection Safety Guidelines.
   - Follow the procedures, as trained.
   - Inspect equipment.
   - Maintain equipment.
   - Report any anomalies to the supervisors.
   - Ensure the equipment is used as the manufacturer recommends.
5. **All Employees of the College** are responsible for ensuring that they follow the procedures and faithfully implement the appropriate responsibilities put forth in the Fall Protection Program.
   - Failure to do so is a serious breach of college policy and subject to disciplinary action that might include termination of employment at the college. The procedures to be followed in the event of such action shall be in keeping with existing guidelines as stated in the appropriate handbook for faculty, administrators, or staff.

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**C. Availability**

The Dickinson College Fall Protection Program shall be readily available to employees and employee representatives through their supervisor or the Director of Environmental Health & Safety

## D. Annual Review

This plan will be reviewed annually by the Environmental Health & Safety Department to ensure current standards and practices are being followed and update the policy to meet with new standards and practices.

# II. FALL PREVENTION

**A. Walking & Working Surfaces**

## 1. Floor Safety

Every stairway floor opening shall be guarded by a standard railing. The railing shall be provided on all exposed sides (except at entrance to stairway). For infrequently used stairways where traffic across the opening prevents the use of fixed standard railing (as when located in aisle spaces, etc.), the guard shall consist of a hinged floor opening cover of standard strength and construction and removable standard railings on all exposed sides (except at entrance to stairway).

Every ladderway floor opening or platform shall be guarded by a standard railing with standard toeboard on all exposed sides (except at entrance to opening), with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening

Every hatchway and chute floor opening shall be guarded by one of the following:

1. Hinged floor opening cover of standard strength and construction equipped with standard railings or permanently attached thereto so as to leave only one exposed side. When the opening is not in use, the cover shall be closed or the exposed side shall be guarded at both top and intermediate positions by removable standard railings.
2. A removable railing with toeboard on not more than two sides of the opening and fixed standard railings with toeboards on all other exposed sides. The removable railings shall be kept in place when the opening is not in use.
3. Where operating conditions necessitate the feeding of material into any hatchway or chute opening, protection shall be provided to prevent a person from falling through the opening.
4. Every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides when work is performed within 6 feet of the opening.
5. Every pit and trapdoor floor opening, infrequently used, shall be guarded by a floor opening cover of standard strength and construction. While the cover is not in place, the pit or trap opening shall be constantly attended by someone or shall be protected on all exposed sides by removable standard railings.
6. Every manhole floor opening shall be guarded by a standard manhole cover which need not be hinged in place. While the cover is not in place, the manhole opening shall be constantly attended by someone or shall be protected by removable standard railings.

7. Every temporary floor opening shall have standard railings, or shall be constantly attended by someone.
8. Every floor hole into which persons can accidentally walk shall be guarded by either:
    a. A standard railing with standard toeboard on all exposed sides, or
    b. A floor hole covers of standard strength and construction. While the cover is not in place, the floor hole shall be constantly attended by someone or shall be protected by a removable standard railing
9. Every floor hole into which persons cannot accidentally walk (on account of fixed machinery, equipment, or walls) shall be protected by a cover that leaves no openings more than 1 inch wide. The cover shall be securely held in place to prevent tools or materials from falling through.
10. Where doors or gates open directly on a stairway, a platform shall be provided, and the swing of the door shall not reduce the effective width to less than 20 inches.

## 2. Wall Openings and Holes

Every wall opening from which there is a drop of more than 4 feet shall be guarded by one of the following:

a. Rail, roller, picket fence, half door, or equivalent barrier. Where there is exposure below to falling materials, a removable toe board or the equivalent shall also be provided. When the opening is not in use for handling materials, the guard shall be kept in position regardless of a door on the opening. In addition, a grab handle shall be provided on each side of the opening with its center approximately 4 feet above floor level and of standard strength and mounting.
b. Extension platform onto which materials can be hoisted for handling, and which shall have side rails or equivalent guards of standard specifications.

Every chute wall opening from which there is a drop of more than 4 feet shall be guarded by one or more of the barriers or as required by the conditions.

Every window wall opening at a stairway landing, floor, platform, or balcony, from which there is a drop of more than 4 feet, and where the bottom of the opening is less than 3 feet above the platform or landing, shall be guarded by standard slats, standard grill work or standard railing.

Where the window opening is below the landing, or platform, a standard toe board shall be provided.

Every temporary wall opening shall have adequate guards but these need not be of standard construction.

Where there is a hazard of materials falling through a wall hole, and the lower edge of the near side of the hole is less than 4 inches above the floor, and the far side of the hole more than 5 feet above the next lower level, the hole shall be protected by a standard toeboard, or an enclosing screen either of solid construction.

## 3. Open-sided floors, Platforms, and Runways

Every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing on all open sides except where there is entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toeboard wherever, beneath the open sides,

1. Persons can pass,
2. There is moving machinery, or
3. There is equipment with which falling materials could create a hazard.

Every runway shall be guarded by a standard on all open sides 4 feet or more above floor or ground level. Wherever tools, machine parts, or materials are likely to be used on the runway, a toeboard shall also be provided on each exposed side.

Runways used exclusively for special purposes (such as oiling, shafting, or filling tank cars) may have the railing on one side omitted where operating conditions necessitate such omission, providing the falling hazard is minimized by using a runway of not less than 18 inches wide. Where persons entering upon runways become thereby exposed to machinery, electrical equipment, or other danger not a falling hazard, additional guarding than is here specified may be essential for protection.

Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and similar hazards shall be guarded with a standard railing and toe board.

## 4. Stairway Railings and Guards

Every flight of stairs having four or more risers shall be equipped with standard stair railings or standard handrails the width of the stair to be measured clear of all obstructions except handrails:

1. On stairways less than 44 inches wide having both sides enclosed, at least one handrail, preferably on the right side descending.
2. On stairways less than 44 inches wide having one side open, at least one stair railing on open side.
3. On stairways less than 44 inches wide have both sides open, one stair railing on each side.
4. On stairways more than 44 inches wide but less than 88 inches wide, one handrail on each enclosed side and one stair railing on each open side.
5. On stairways 88 or more inches wide, one handrail on each enclosed side, one stair railing on each open side, and one intermediate stair railing located approximately midway of the width.

Winding stairs shall be equipped with a handrail offset to prevent walking on all portions of the treads having width less than 6 inches.

## 5. Railing, Toe Boards, and Cover Specifications

A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42 inches nominal from upper surface of top rail to floor, platform, runway, or ramp level. The top rail shall be smooth-surfaced throughout the length of the railing. The intermediate rail shall be approximately halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard.

A stair railing shall be of construction similar to a standard railing but the vertical height shall be not more than 34 inches or less than 30 inches from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread.

For wood railings, the posts shall be of at least 2-inch by 4-inch stock spaced not to exceed 6 feet; the top and intermediate rails shall be of at least 2-inch by 4-inch stock. If top rail is made of two right-angle pieces of 1-inch by 4-inch stock, posts may be spaced on 8-foot centers, with 2-inch by 4-inch intermediate rail.

For pipe railings, posts and top and intermediate railings shall be at least 1 1/2 inches nominal diameter with posts spaced not more than 8 feet on centers.

For structural steel railings, posts and top and intermediate rails shall be of 2-inch by 2-inch by 3/8-inch angles or other metal shapes of equivalent bending strength with posts spaced not more than 8 feet on centers.

The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure shall be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail.

Other types, sizes, and arrangements of railing construction are acceptable provided they meet the following conditions:

1. A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of 42 inches nominal;
2. A strength to withstand at least the minimum requirement of 200 pounds top rail pressure;
3. Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail;

A standard toeboard shall be 4 inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and with not more than 1/4-inch clearance above floor level. It may be made of any substantial material either solid or with openings not over 1 inch in greatest dimension.

Where material is piled to such height that a standard toeboard does not provide protection, paneling from floor to intermediate rail, or to top rail shall be provided.

A handrail shall consist of a lengthwise member mounted directly on a wall or partition by means of brackets attached to the lower side of the handrail so as to offer no

obstruction to a smooth surface along the top and both sides of the handrail. The handrail shall be of rounded or other section that will furnish an adequate handhold for anyone grasping it to avoid falling. The ends of the handrail should be turned in to the supporting wall or otherwise arranged so as not to constitute a projection hazard.

The height of handrails shall be not more than 34 inches or less than 30 inches from upper surface of handrail to surface of tread in line with face of riser or to surface of ramp.

The size of handrails shall be: When of hardwood, at least 2 inches in diameter; when of metal pipe, at least 1 1/2 inches in diameter. The length of brackets shall be such as will give a clearance between handrail and wall or any projection thereon of at least 3 inches. The spacing of brackets shall not exceed 8 feet.

The mounting of handrails shall be such that the completed structure is capable of withstanding a load of at least 200 pounds applied in any direction at any point on the rail.

All handrails and railings shall be provided with a clearance of not less than 3 inches between the handrail or railing and any other object.

Floor opening covers may be of any material that meets the following strength requirements:

1. Trench or conduit covers and their supports, when located in plant roadways, shall be designed to carry a truck rear-axle load of at least 20,000 pounds.
2. Manhole covers and their supports, when located in plant roadways, shall comply with local standard highway requirements if any; otherwise, they shall be designed to carry a truck rear-axle load of at least 20,000 pounds.
3. The construction of floor opening covers may be of any material that meets the strength requirements. Covers projecting not more than 1 inch above the floor level may be used providing all edges are chamfered to an angle with the horizontal of not over 30 degrees. All hinges, handles, bolts, or other parts shall set flush with the floor or cover surface.

Skylight screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied perpendicularly at any one area on the screen. They shall also be of such construction and mounting that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork with openings not more than 4 inches long or of slatwork with openings and not more than 2 inches wide with length unrestricted.

Wall opening barriers (rails, rollers, picket fences, and half doors) shall be of such construction and mounting that, when in place at the opening, the barrier is capable of withstanding a load of at least 200 pounds applied in any direction (except upward) at any point on the top rail or corresponding member.

Wall opening grab handles shall be not less than 12 inches in length and shall be so mounted as to give 3 inches clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle shall be such that the completed structure is capable of withstanding a load of at least 200 pounds applied in any direction at any point of the handle.

Wall opening screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied horizontally at any point on the near side of the screen. They may be of solid construction, of grillwork with openings not more than 8 inches long, or of slatwork with openings not more than 4 inches wide with length unrestricted.

**B. LADDER SAFETY**

Select the right ladder for the task. The ladder's type is determined by how much weight it can support. The ladder should be selected to be sufficient for your weight plus the weight of any tools and materials you're carrying.

- TYPE 1A-Extra-heavy industrial ladder will support 300 lbs.
- TYPE 1-Heavy-duty industrial ladder will support 250 lbs.
- TYPE 2-Medium-duty commercial ladder will support 225 lbs.
- TYPE 3-Light-duty household ladder will support 200 lbs.

In some situations barricades/cones or a second person maybe required to secure the area or to assist and hold the ladder.

## 1. Step Ladders

- Inspect the ladder before using it. Remove defective ladders from service and notify your supervisor
- Always open and set the ladder level on all four feet on affirm base, lock spreaders in place
- Never use a stepladder like a straight ladder
- Never climb higher than the second thread or rung from the top.
- Do not place tools or materials on the steps.
- Do not place a ladder in front of a door that opens toward it unless the door is locked, blocked or guarded by someone.
- Keep both feet on the ladder. Do not reach out too far or place one foot on some other surface.
- Only one person is to be on a ladder at any time.
- Do not use ladders for skids, braces, workbenches or any other purpose other than climbing.
- Two people may be required when working from a ladder of any height, check with your supervisor before starting the task.

## 2. Straight and Extended Ladders

Extension ladders should have proper overlap, depending on their length.

- Three foot overlap for 32-foot ladder
- Four foot overlap for 32- to 36-foot ladder
- Five foot overlap for 36- to 48-foot ladder
- Six foot overlap for 48-foot ladder

- Inspect ladders before using them. Remove defective ladders from service and notify your supervisor.
- Use the four to one ration when placing a ladder into service. Place the ladder so that its feet are one foot away from what it leans against for every four feet in height to the point where the top of the ladder rests.
- Place the ladder's feet on a substantial and level base, not on movable objects, and the top of the ladder must be adequately tied off at the top to prevent slipping.
- The top of the ladder must extend at least three feet beyond the supporting object when used as access to an elevated work area such as a roof. This allows ample mounting and dismounting onto the work area.
- Hold onto the ladder with both hands when going up or down. If material must be handled, raise or lower it with a rope.
- Always face the ladder when climbing up, climbing down or when working.
- Be sure that your shoes are not greasy, muddy, or slippery before climbing. Check the rungs for grease, mud and other debris and remove it before climbing the ladder.
- Do not climb higher than the third rung from the top on a straight or extension ladder.

# Ladder Inspection Checklist

Ladder No._____ Location_____ Date_____

**Ladder Substance:** Wood_____ Aluminum_____ Steel_____ Fiberglass____

**Ladder Style:** Single_____ Extension _____ Step _____ Platform _____

**Other:** _____

**Ladder Type**: _____

**Inspection**
Side Rails: Good_____ Bad_____ Need Testing_____

Comments: _____ _____

**Rungs or Steps**: Good_____ Bad_____ Need Testing_____

Comments: _____

| **Hardware:** | Good | Need Repair |
|---|---|---|
| Slide Guides | _____ | _____ |
| Rung Locks | _____ | _____ |
| Safety Shoes | _____ | _____ |
| Pail Shelf | _____ | _____ |
| Spreader Braces | _____ | _____ |
| Truss Rods and Blocks | _____ | _____ |

**Rivets:** Missing_____ Loose_____

Comments _____

**General Overall Condition:** Good_____ Fair_____ Poor_____

Comments _____

Signature:_____ Date:_____

# III. FALL PROTECTION

## A. SCAFFOLDING SAFETY

## 1. PURPOSE

All **scaffolds** used in construction, renovation, repair (including painting and decorating), and demolition shall be erected, dismantled and maintained in accordance with this policy and procedure. These procedures will be reviewed and updated as needed to comply with new OSHA regulations, new best practices in scaffolding.

Competent Persons are responsible for the following:

a. Not to inter mix scaffold components manufactured by different manufacturers unless the components fit together without force and the scaffold's structural integrity is maintained. Scaffold components manufactured by different manufacturers will not be modified in order to inter mix them unless the Competent Person determines the resulting scaffold is structurally sound.

b. Evaluating all direct connections and to confirm, based on that evaluation, that the supporting surfaces are capable of supporting the loads to be imposed before a suspension scaffold may be used.

c. Inspecting all suspension scaffold ropes prior to each work shift and after every occurrence which could affect a rope's integrity. Ropes shall be replaced if any of the conditions outlined in 29 CFR 1926.451(d)(10) exist.

d. Directly supervising the erection, moving, dismantling, or altering of all scaffolds used by department employees.

Qualified Persons - Shall be responsible for the following:

a. The design, construction and loading of all scaffolds.

b. Ensuring that swaged attachments or spliced eyes on wire suspension scaffolds are not used unless they are made by the wire rope manufacturer.

c. Training each employee who performs work while on a scaffold to recognize the hazards employed with the type of scaffold being used and to understand the procedures to control or to minimize

those hazards. This training is to be documented and signed copies to be given to the Department Supervisor

## 2. General Requirements

*Capacity/Loads*

A qualified person must design all scaffolding in accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR 1926.451 "General Requirements for Scaffolds" and 29 CFR 1926.452 "Additional Requirements Applicable to Specific Types of Scaffolds".

Stationary scaffolds over 125 feet in height and rolling scaffolds over 60 feet in height shall be designed by a **professional engineer**. All equipment shall be inspected to see that it is in good condition and is serviceable. Damaged or deteriorated equipment shall not be used.

All scaffolds and their components must support without failure its own weight and at least four times the maximum intended load applied or transmitted to the scaffold.

## 3. Platforms

Platforms shall be constructed as follows:

- Platforms shall be entirely planked and decked with space not more than one inch wide between the platforms and uprights;
- The platform shall not deflect more than 1/60 of the span when loaded;
- All platforms shall be kept clear of debris or other obstructions that may hinder the working clearance on the platform;
- Wood planks shall be inspected to see that there are graded for scaffold use, are sound and in good condition, straight grained, free from saw cuts, splits and holes;
- Platforms and walkways shall be at least 18 inches in width. When the work area is less than 18 inches wide, **guardrails** and/or personal fall arrest systems shall be used;
- Where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches unless the platforms are nailed;
- A platform greater than 10 feet in length shall not extend over its support more then 18 inches, unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping, or has guardrails which block employee access to the cantilevered end;
- Wood surface shall not be covered with opaque finishes, other than the edges for making identification;
- Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating shall not obscure the top or bottom wood surfaces; and

- Each end of the platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least six inches.

Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained. Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that **galvanic action** will not reduce the strength of any component.

## 4. Guardrails

All scaffolds more than six feet above the lower level shall protect employees with guardrails on each open side of the scaffold. Guardrails shall be installed along the open sides and ends before releasing the scaffold for use by the employees, other than erection or dismantling crews.

Guardrails are not required when:

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

Materials such as steel or plastic banding shall not be used for toprails or midrails.

## 5. Erection of Scaffolds

*Prior to Erection – All Scaffold Assemblies*

All jobsites and work areas shall be inspected prior to the erection of scaffolds to determine the site's ability to support structure, and for location of electric power lines, overhead obstructions, wind conditions, and the need for overhead protection or weather protection coverings.

Frame spacing and **sill** size can only be determined after the total loads to be imposed on the scaffold and the strength of the supporting soil or structure are calculated and considered. Special consideration is required when scaffolding is to be erected on fill, soft or frozen ground. Sills shall be level and in full contact with the supporting surface. A qualified person must do this analysis. Load carrying information on components is available from the scaffold manufacturer.

Wood planks used for **platforms** on scaffolding shall be specifically graded for scaffold use by an approved grading agency.

*Erection of Fixed Scaffold*

Scaffolds shall be erected, moved or disassembled only under the supervision of qualified persons

**Base plates** or **screw jacks** shall be in firm contact with both the sills and the legs of the scaffolding. Screw jacks with base plates shall be used to compensate for uneven ground. Do not use unstable objects such as loose bricks, blocks of wood or concrete to shore up the uneven surface.

All scaffolding shall be plumb and level. **Tying**, **guying**, or **bracing** may be needed to assure a safe and stable scaffold assembly. Do not force members to fit. Be sure scaffolding stays level and plumb as erection progresses. The height of the scaffold in relation to the minimum base width, wind loads, the use of brackets or cantilevered platforms and imposed scaffold load determines the need for stability bracing.

## 6. Access Requirements

**Access** shall be provided when scaffold platforms are more than 24 inches above or below the point of access. Direct access is acceptable when the scaffold is not more than 14 inches horizontally and not more than 24 inches vertically from the other surfaces. Cross braces shall not be used as a means of access.

Type of accesses which are permitted:

- Portable ladders;
- Hook-on ladders;
- Attachable ladders
- Stairways;
- Stair towers;
- Ramps and walkways; or
- Integral prefabricated frames.

When erecting or dismantling supported scaffolds, a safe means of access shall be provided when a competent person has determined the feasibility and analyzed the site conditions.

## 7. Use Requirements

The use of **shore scaffolds** and **lean-to-scaffolds** is strictly prohibited. All employees are prohibited from working on scaffolds covered with snow, ice or other slippery materials.

Ladders shall not be used on scaffolds to increase the working level height of employees, except on large area scaffolds where employers have satisfied the following criteria:

- When the ladder is placed against a structure which is not a part of the scaffold, the scaffold shall be secured against the sideways thrust exerted by the ladder;
- The platform units shall be secured to the scaffold to prevent their movement;
- The ladder legs shall be on the same platform or other means shall be provided to stabilize the ladder against unequal platform deflection; and
- The ladder legs shall be secured to prevent them from slipping or being pushed off the platform.

*Clearance Distances Between Scaffolds and Power lines*

The following table provides the clearance distances between scaffolds and power lines, or any other conductive material, while being erected, used, dismantled, altered or moved.

| **Insulated Lines Voltage** | **Minimum Distance** | **Alternatives** |
|---|---|---|
| Less than 300 volts<br>300 to 50 kv<br>More than 50 kv | 3 feet<br>10 feet<br>10 feet<br>*General Rule*: 0.4 inches for each 1 kv over 50 kv | Two times the length of the line insulator, but never less than 10 feet |
| **Uninsulated Lines Voltage** | **Minimum Distance** | **Alternatives** |
| Less than 50 kv<br>More than 50 kv | 10 feet<br>10 feet plus<br>*General Rule:* 0.4 inches for each 1 kv over 50 kv | Two times the length of the line insulator, but never less than 10 feet |

*EXCEPTION: Scaffolds and materials may be closer to power lines than specified where such clearance is necessary for performance of work and only after the utility company or electrical system operator has de-energized or relocated the lines.*

## 8. Stilts

All employees using stilts shall:

- An employee may wear stilts on a scaffold only if it is a large area scaffold.
- When an employee is using stilts on a large area scaffold where a guardrail system is used to provide fall protection, the guardrail system shall be increased in height by an amount equal to the height of the stilts being used by the employee.
- Surfaces on which stilts are used shall be flat and free of pits, holes and obstructions, such as debris, as well as other tripping and falling hazards.
- Stilts shall be properly maintained. Any alteration of the original equipment shall be approved by the manufacturer.

## 9. Falling Object Protection

All employees shall wear hard-hats when working on, assembling, or dismantling scaffolds. This is our primary protection from falling objects.

Additionally, we shall:

- Install guardrail systems with openings small enough to prevent passage of potential falling objects.

- Prevent tools, materials, or equipment that inadvertently fall from our scaffolds from striking any person(s) by barricading the area below the scaffold.

In addition to wearing hard-hats:

- Each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects.

- When falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measurers, the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

- Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

The area below the scaffold to which objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area; or A toeboard shall be erected along the edge of the platforms more than 10 feet above lower levels for a distance sufficient to protect employees below, except on float (ship) scaffolds where an edging of ¾ x 1½ inch wood or equivalent may be used in lieu of toeboards;

Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below; or A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or

A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below. Canopies, when used for falling object protection, shall comply with the following criteria:

- Capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toeboard and
- At least three and one-half inches high from the top edge of the toeboard to the level of the walking/working surface. Toeboards shall be securely fastened in place at the outermost edge of the platform and have not more than ¼ inch clearance above the walking/working surface. Toeboards shall be solid or with openings not over one inch in the greatest dimension.]

## 10. Fall Protection

All employees working on scaffolds six feet or more above ground/floor level shall use fall protection policy.

All scaffolding shall have toeboards, screens, a guardrail system and/or debris nets as determined by a competent person.

**B. AERIAL PLATFORM SAFETY**

## 1. Purpose

To outline the safe operating procedures of aerial platforms, aerial ladders, articulating boom platforms, vertical towers, ladder trucks, or a combination of such devices used to elevate employees to job-sites above ground and to prevent serious accidents from occurring while operating these devices. This procedure applies to the above devices owned by Dickinson College or leased by Dickinson, which are operated by college employees

## 2. Procedure

a. Only Authorized (those who have been properly trained and certified) employees shall operate an aerial platform/lift, extensible boom platform, aerial ladders, articulating boom platforms, vertical towers, ladder trucks, tower trucks, or any combination of such devices.

b. An employee who is to serve as an operator or a worker who is to perform work from any aerial lift shall be trained on this procedure and on the operating manual of the specific device which is to be operated or work performed from.

c. Employees who are scheduled to perform routine maintenance, inspections, or to repair any aerial lift shall have received training on this procedure and on the operating manual of the specific device prior to performing any work on that device.

   Note: Operating and maintenance manuals should be obtained from the manufacturer of the aerial platform.

d. A body harness shall be worn and a lanyard attached to the boom or basket when working from an aerial lift/platform

e. A copy of this procedure, the operating manual, maintenance manual, and the log of inspections shall be kept with each aerial platform. These documents are considered an integral part of the aerial platform and are vital to communicate necessary safety information to users and operators.

f. No aerial platform shall be modified or altered without the modifications or alterations being approved and certified in writing by the manufacture. Records of all approved modifications and alterations, including written authorization from the manufacturer for the modification or alteration, shall be kept with the aerial platform as part of the operating and maintenance manual. The altering or disabling of interlocks or other safety devices is prohibited.

g. All Manufacture’s Safety Bulletins shall be complied with as received from the manufacturer or dealer and copies of them kept with the aerial platform as part of the operating and maintenance manuals.

h. Maintenance - A preventive maintenance program shall be established for each aerial platform in use at the college, by the responsible department, in accordance with the manufacturer's recommendations and based on the environment and the severity of use of the aerial platform.

i. Frequent and annual inspections shall be performed by a trained employee.

a. Frequent inspections shall be made every three months or 150 hours of operating time on all aerial platforms.

b. An inspection shall be made prior to use if the aerial platform has been out of service for a period longer than three months.

c. These frequent inspections shall be made by a person qualified (trained) as a mechanic on the specific make and model of the aerial platform.

d. The inspection shall include all items specified by the manufacturer for a frequent inspection and shall include, but not be limited to the following:

- All functions and their control for speed(s), smoothness, and limits of motion.
- Emergency lowering mechanism.
- All chain and cable mechanisms for adjustment and worn or damaged parts.
- All emergency and safety devices.
- Lubrication of all moving parts, inspection of filter element(s), hydraulic oil, engine oil, and coolant, as specified by the manufacturer.
- Visual inspection of structural components and other critical components, such as fasteners, pins, shafts, and locking devices.
- Placards, warnings, and control markings.
- Items specified by the manufacturer.
- Correction of all malfunctions and problems identified and further inspection, if necessary, shall be performed before the aerial platform is returned to service.
- Written documentation of all quarterly inspections shall be kept with the aerial platform and a copy kept on file by the department.

e. Annual inspections shall be made by a person qualified as a mechanic on the specific make and model of the aerial platform. The inspection shall include all items specified by the manufacturer for an annual inspection. NOTE: This annual

inspection is usually a part of the service contract on the aerial platform and is performed by a manufacturer's representative.

f. Aerial platforms that are not in proper operating condition shall be removed from service until repaired. A warning tag stating "DO NOT USE" shall be attached to the control panel of the aerial platform.

g. Written records of all inspections shall include the deficiencies found, corrective action taken, the date of the inspection and the date of the corrective action along with the name of the person(s) performing the inspection and the corrective action. Written records shall be kept with the aerial platform as part of the operating and maintenance manual and a copy kept on file by the department.

## 3. Maintenance Safety Precautions

Before adjustments and/or repairs are started on an aerial platform, the following precautions shall be taken as applicable:

- The platform shall be lowered to the full down position, if possible, or otherwise secured by blocking and cribbing to prevent dropping.
- All controls shall be in the "off" position and all operating features secured from inadvertent motion by brakes, blocks, or other means.
- The power plant shall be stopped and "Locked Out" to prevent inadvertent starting.
- Hydraulic oil pressure shall be relieved from all hydraulic circuits before loosening or removing hydraulic components.
- Safety props or latches shall be installed where applicable as described by the manufacturer.
- Any additional precautions specified by the manufacturer shall be followed.

**Replacement Parts** - When parts or components are replaced, they shall be identical or equivalent to the original aerial platform parts or components.

Pre-start Inspection - Before use each day or at the beginning of each shift, the employee shall visually inspect the aerial platform and conduct a functional test (a check list shall be utilized for this purpose) including but not limited to the following:

- Operating and emergency controls.
- Safety devices.
- Personal protective devices including fall protection.
- Air, hydraulic, and fuel system leaks.
- Cables and wiring harness.
- Loose and missing parts.
- Tires and wheels.
- Placards, warnings, and control markings.
- Outriggers, stabilizers, and other structures.
- Guardrail system.
- Items specified by the manufacturer.

**Before Operation** - Before authorizing an employee to operate an aerial platform the supervisor shall:

- Ensure that employee who will be working on the aerial platform has been properly trained on this procedure, the operating manual of the particular type of aerial platform to be used, and that this training has been properly documented.
- Determine that the purpose for which the aerial platform is to be used is within the scope of the intended applications defined by the manufacturer.
- Provide approved fall protection devices and other safety gear for all employees who will be working on the platform.
- Check the area in which the aerial platform is to be used for possible hazards such as, but not limited to:
- Drop-offs or holes.
- Bumps or floor obstructions.
- Debris.
- Overhead obstructions and high voltage conductors.
- Hazardous locations.

- Inadequate surface and support to withstand all load forces imposed by the aerial platform in all operating configurations.
- Wind and weather conditions.
- Other possible unsafe conditions.
- Presence of unauthorized persons.

**During Operation** - The aerial platform shall be operated in accordance with this procedure. The supervisor as needed shall direct each operator to ensure the following before each elevation of the platform:

- That the aerial platform is operated on a surface within the limits specified by the manufacturer.
- That the outriggers, stabilizers, extendable axles, or other stabilizing methods are used as required by the manufacturer.
- That guard rails are installed and access gates or openings are closed per manufacturer's instructions.
- That the load and its distribution on the platform and any platform extension are in accordance with the manufacturer's rated capacity for that specific configuration.
- That there is adequate clearance from overhead obstructions.
- That the minimum safe approach distances to energized power lines and parts are maintained.
- That all safety precautions defined in this procedure and the Operating and Maintenance Manual for the particular model of aerial platform being used are followed during the operation of the aerial platform.
- That all employees maintain a firm footing, with both feet, on the platform floor while working thereon. The use of planks, ladders, or any other device on the aerial platform for achieving additional height or reach is prohibited.
- Special precautions shall be taken when other moving equipment or vehicles are present to comply with local ordinances or safety standards established for the workplace. Warnings such as but not limited to: flags, roped off areas, flashing lights, and barricades shall be used.

**Reporting Problems or Malfunctions** - The operator shall immediately report any problems or malfunctions that become evident during operation of the aerial platform to

the supervisor. Any problems or malfunctions that affect the safety or operation of the aerial platform shall be repaired prior to continued use of the aerial platform.

**Entanglement** - Care shall be taken to prevent rope, electric cords, hoses, etc., from becoming entangled in the aerial platform.

**Capacity Limitation** - Aerial platform rated capacities shall not be exceeded when loads are transferred to the platform at any height.

**Work Area** - the operator shall ensure that the area surrounding the aerial platform is clear of personnel and equipment before lowering the platform.

**Fueling** - The engine shall be shut down while fuel tanks are being filled. Fueling shall be done in a well-ventilated area free of flame, sparks, or other hazards that may cause fire or explosion.

**Battery Charging** - Batteries shall be charged in a well-ventilated area free of flame, sparks, or other hazards that may cause fire or explosion.

**Platform Positioning** - the aerial platform shall not be positioned against another object to steady the platform.

**MIS-USE AS A CRANE** - The aerial platform shall not be used as a crane.

**Operating Area** - The aerial platform shall not be operated from a position on trucks, trailers, railway cars, floating vessels, scaffolds, or similar equipment, unless the application is approved in writing by the manufacturer.

**Travel Conditions** - Under all travel conditions, the operator shall limit travel speed according to conditions of ground surface, congestion, visibility, slope, locations of personnel, and other factors causing hazards of collision or injury to personnel.

**Unauthorized Use** - Means shall be used to protect against use by unauthorized person(s).

**Shutdown of the Aerial Platform** - The operator shall cease operation of the aerial platform in case of any suspected malfunctions, any hazard, or potentially unsafe condition that may be encountered. The aerial platform and/or the work area shall then be inspected and any malfunction or problem shall be corrected before further operation of the platform.

**C. CONSTRUCTION**

## 1. General

In certain applications, college employees will perform job tasks that are considered a construction field job task and must comply with standards set forth in OSHA 1926. This section sets forth requirements for employers to provide fall protection systems. All fall protection required by this section shall conform to the criteria set forth in 1926.502

The employer shall determine if the walking/working surfaces on which its employees are to work have the strength and structural integrity to support employees safely. Employees shall be allowed to work on those surfaces only when the surfaces have the requisite strength and structural integrity.

## 2. Unprotected sides and edges

Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.

**3. Leading edge** means 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

Each employee who is constructing a leading edge 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. Exception: When the college can demonstrate that it is infeasible or creates a greater hazard to use these systems, the college shall develop and implement a fall protection plan.

Each employee on a walking/working surface 6 feet or more above a lower level where leading edges are under construction, but who is not engaged in the leading edge work, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

## 4. Hoist areas

Each employee in a hoist area shall be protected from falling 6 feet or more to lower levels by guardrail systems or personal fall arrest systems. If guardrail systems, [or chain, gate, or guardrail] or portions thereof, are removed to facilitate the hoisting

operation (e.g., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment and materials, for example), that employee shall be protected from fall hazards by a personal fall arrest system.

## 5. Holes

Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes.

Each employee on a walking/working surface shall be protected from tripping in or stepping into or through holes (including skylights) by covers. Each employee on a walking/working surface shall be protected from objects falling through holes (including skylights) by covers.

## 6. Formwork and reinforcing steel

Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.

Ramps, runways, and other walkways

Each employee on ramps, runways, and other walkways shall be protected from falling 6 feet or more to lower levels by guardrail systems.

## 7. Excavations

Each employee at the edge of an excavation 6 feet or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barrier;

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

## 8. Dangerous equipment

Each employee less than 6 feet above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards.

Each employee 6 feet or more above dangerous equipment shall be protected from fall hazards by guardrail systems, personal fall arrest systems, or safety net systems.

## 9. Overhand bricklaying and related work

Except as otherwise provided, each employee performing overhand bricklaying and related work 6 feet or more above lower levels, shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or shall work in a controlled access zone.

Each employee reaching more than 10 inches below the level of the walking/working surface on which they are working, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

## 10. Roofing work on Low-slope roofs

Except as otherwise provided, each employee engaged in roofing activities on low-slope roofs, with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system.

Alternative fall protection may be used on low-slope roofs undergoing residential construction in accordance with OSHA Directive STD 3-0.1A.

## 11. Steep roofs

Each employee on a steep roof with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems.

## 12. Pre-cast concrete erection

Each employee engaged in the erection of pre-cast concrete members (including, but not limited to the erection of wall panels, columns, beams, and floor and roof "tees") and related operations such as grouting of pre-cast concrete members, who is 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems, unless another provision provides for an alternative fall protection measure. Exception: When the college can demonstrate that it is infeasible or creates a greater hazard to use these systems, the college shall develop and implement a fall protection plan.

## 13. Residential construction

Each employee engaged in residential construction activities 6 feet or more above lower levels shall be protected by guardrail systems, safety net system, or personal fall arrest system unless another provision provides for an alternative fall protection measure. Exception: When the college can demonstrate that it is infeasible or creates a greater

hazard to use these systems, the college shall develop and implement a fall protection plan.

## 14. Wall openings

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.

## 15. Walking/working surfaces not otherwise addressed

Each employee on a walking/working surface 6 feet or more above lower levels shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

## 16. Protection from falling objects

When an employee is exposed to falling objects, the employer shall have each employee wear a hard hat and shall implement one of the following measures:

Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels; or,

Erect a canopy structure and keep potential fall objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced; or

Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects would not go over the edge if they were accidentally displaced

### D. Fall protection systems

Dickinson College shall provide and install all fall protection systems required for an employee, and shall comply with all other pertinent requirements before that employee begins the work that necessitates the fall protection.

## 1. Guardrail systems

Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches plus or minus 3 inches above the walking/working level. When conditions

warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.

Note: When employees are using stilts, the top edge height of the top rail, or equivalent member, shall be increased an amount equal to the height of the stilts.

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

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

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

Intermediate members (such as balusters), when used between posts, shall be not more than 19 inches apart.

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

Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge.

When the 200 pound test load is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches above the walking/working level.

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

Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing. The ends of all top rails and mid-rails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard. Steel banding and plastic banding shall not be used as top rails or mid-rails.

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

When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole.

When guardrail systems are used around holes used for the passage of materials, the hole shall have not more than two sides provided with removable guardrail sections to allow the passage of materials. When the hole is not in use, it shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges.

When guardrail systems are used around holes which are used as points of access (such as ladder-ways), they shall be provided with a gate, or be so offset that a person cannot walk directly into the hole.

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

Manila, plastic or synthetic rope being used for top rails or mid-rails shall be inspected as frequently as necessary to ensure that it continues to meet the strength requirements.

## 2. Safety net systems

Safety nets shall be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet below such level. When nets are used on bridges, the potential fall area from the walking/working surface to the net shall be unobstructed.

Safety nets shall extend outward from the outermost projection of the work surface as follows:

| Vertical distance from working level to horizontal plane of net | Minimum required horizontal distance of outer edge of net from the edge of the working surface |
|---|---|
| Up to 5 feet | 8 feet. |
| More than 5 feet up to 10 feet | 10 feet. |
| More than 10 feet | 13 feet. |

Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified below.

Safety nets and their installations shall be capable of absorbing an impact force equal to that produced by the drop test specified below.

Safety nets and safety net installations shall be drop-tested at the jobsite after initial installation and before being used as a fall protection system, whenever relocated, after major repair, and at 6-month intervals if left in one place. The drop-test shall consist of a 400 pound bag of sand 30 + or - 2 inches in diameter dropped into the net from the highest walking/working surface at which employees are exposed to fall hazards, but not from less than 42 inches above that level.

Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage, and other deterioration. Defective components shall be removed from service. Safety nets shall also be inspected after any occurrence which could affect the integrity of the safety net system.

Materials, scrap pieces, equipment, and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift.

The maximum size of each safety net mesh opening shall not exceed 36 square inches nor be longer than 6 inches on any side, and the opening, measured center-to-center of mesh ropes or webbing, shall not be longer than 6 inches. All mesh crossings shall be secured to prevent enlargement of the mesh opening.

Each safety net (shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds.

Connections between safety net panels shall be as strong as integral net components and shall be spaced not more than 6 inches apart.

## 3. Personal fall arrest systems

Effective January 1, 1998, body belts are not acceptable as part of a personal fall arrest system. Note: The use of a body belt in a positioning device system is acceptable and is regulated.

Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.

Dee-rings and snap hooks shall have a minimum tensile strength of 5,000 lbs. Dee-rings and snap hooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.

Connectors shall be sized to be compatible with the employee to which they are connected to prevent unintentional disengagement of the by depression of the keeper by the connected employee or shall be a locking type designed and used to prevent disengagement of the by the contact of the keeper by the connected member. Effective January 1, 1998, only locking type s shall be used.

Unless the snap-hook is a locking type and designed for the following connections, snap-hooks shall not be engaged:

- directly to webbing, rope or wire rope;
- to each other;
- to a Dee-ring to which another snap-hook or other connector is attached;
- to a horizontal lifeline; or
- To any object which is incompatibly shaped or dimensioned in relation to the snap-hook such that unintentional disengagement could occur by the connected object being able to depress the snap-hook keeper and release itself.
- On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.

Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds. When vertical lifelines are used, each employee shall be attached to a separate lifeline. Except during the following:

- During the construction of elevator shafts, two employees may be attached to the same lifeline in the hoist way, provided both employees are working atop a false car that is equipped with guardrails; the strength of the lifeline is 10,000 pounds [5,000 pounds per employee attached] and all other criteria specified in this paragraph for lifelines have been met.

Lifelines shall be protected against being cut or abraded.

Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, rip stitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers.

Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:

- as part of a complete personal fall arrest system which maintains a safety factor of at least two; and
- Under the supervision of a qualified person.

Personal fall arrest systems, when stopping a fall, shall:

- limit maximum arresting force on an employee to 900 pounds when used with a body belt;
- limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
- be rigged such that an employee can neither free fall more than 6 feet nor contact any lower level;
- bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet and,
- Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet or the free fall distance permitted by the system, whichever is less.

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

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

Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

The College shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.

Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.

Body belts shall be at least one and five-eighths (1 5/8) inches wide.

Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists except as specified in this document.

When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

## 5. Positioning device systems

Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet. Positioning devices shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, which ever is greater.

Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials. Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of this system. Connecting assemblies shall have a minimum tensile strength of 5,000 pounds.

Dee-rings and snap-hooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.

Snap-hooks shall be sized to be compatible with the member to whom they are connected to prevent unintentional disengagement of the snap-hook by depression of the snap-hook keeper by the connected member, or shall be a locking type snap-hook designed and used to prevent disengagement of the snap-hook by the contact of the snap-hook keeper by the connected member. As of January 1, 1998, only locking type snap-hooks shall be used.

Unless the snap-hook is a locking type and designed for the following connections, snap-hooks shall not be engaged:

- directly to webbing, rope or wire rope;
- to each other;
- to a Dee-ring to which another snap-hook or other connector is attached;
- to a horizontal lifeline; or
- To any object which is incompatibly shaped or dimensioned in relation to the snap-hook such that unintentional disengagement could occur by the connected object being able to depress the snap-hook keeper and release itself.
- Positioning device systems shall be inspected prior to each use for wear, damage, and other deterioration and defective components shall be removed from service.
- Body belts, harnesses, and components shall be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.

## 6. Warning line systems

The warning line shall be erected around all sides of the roof work area. When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet from the roof edge.

When mechanical equipment is being used, the warning line shall be erected not less than 6 feet from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of mechanical equipment operation. Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.

When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.

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

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

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

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

## 7. Controlled access zones

When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.

When control lines are used, they shall be erected not less than 6 feet nor more than 25 feet from the unprotected or leading edge, except when erecting pre-cast concrete members.

When erecting pre-cast concrete members, the control line shall be erected not less than 6 feet nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a guardrail system or wall.

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

- The controlled access zone shall be defined by a control line erected not less than 10 feet nor more than 15 feet from the working edge.
- The control line shall extend for a distance sufficient for the controlled access zone to enclose all employees performing overhand bricklaying and related work at the working edge and shall be approximately parallel to the working edge.
- Additional control lines shall be erected at each end to enclose the controlled access zone.
- Only employees engaged in overhand bricklaying or related work shall be permitted in the controlled access zone.

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

- Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the walking/working surface and its highest point is not more than 45 inches [50 inches when overhand bricklaying operations are being performed] from the walking/working surface.
- Each line shall have a minimum breaking strength of 200 pounds
- On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.
- On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

## 8. Safety monitoring systems

The college has designated college administrators and staff supervisors to monitor the safety of other employees and the college shall ensure that the safety monitors complies with the following requirements:

1. The safety monitor shall be competent to recognize fall hazards;
2. The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner;
3. The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored;
4. The safety monitor shall be close enough to communicate orally with the employee; and
5. The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.
6. Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-slope roofs.
7. No employee, other than an employee engaged in roofing work [on low-sloped roofs] or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.
8. Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

## 9. Covers

Covers for holes in floors, roofs, and other walking/working surfaces shall meet the following requirements:

1. Covers located in roadways and vehicular aisles shall be capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over the cover.
2. All other covers shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.
3. All covers shall be secured when installed so as to prevent accidental displacement by the wind, equipment, or employees.
4. All covers shall be color coded or they shall be marked with the word "HOLE" or "COVER" to provide warning of the hazard.

Note: This provision does not apply to cast iron manhole covers or steel grates used on streets or roadways.

## 10. Protection from falling objects

Falling object protection shall comply with the following provisions:

1. Toeboards, when used as falling object protection, shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.
2. Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard.
3. Toeboards shall be a minimum of 3 1/2 inches in vertical height from their top edge to the level of the walking/working surface. They shall have not more than 1/4 inch clearance above the walking/working surface. They shall be solid or have openings not over 1 inch in greatest dimension.
4. Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening shall be erected from the walking/working surface or toeboard to the top of a guardrail system's top rail or mid-rail, for a distance sufficient to protect employees below.
5. Guardrail systems, when used as falling object protection, shall have all openings small enough to prevent passage of potential falling objects.
6. During the performance of overhand bricklaying and related work:
    - No materials or equipment except masonry and mortar shall be stored within 4 feet of the working edge.
    - Excess mortar, broken or scattered masonry units, and all other materials and debris shall be kept clear from the work area by removal at regular intervals.
7. During the performance of roofing work:

    - Materials and equipment shall not be stored within 6 feet of a roof edge unless guardrails are erected at the edge.
    - Materials which are piled, grouped, or stacked near a roof edge shall be stable and self-supporting.

8. Canopies, when used as falling object protection, shall be strong enough to prevent collapse and to prevent penetration by any objects which may fall onto the canopy.

The fall protection plan shall identify each location where conventional fall protection methods cannot be used. These locations shall then be classified as controlled access zones and the employer must comply with the criteria in paragraph (g) of this section.

In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer shall investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incidents.

## III. TRAINING

### A. Ladder Safety

All employees who use and climb ladders shall be trained by a department supervisor at least once every three years on ladder safety and how to complete the Ladder Inspection Form.

### B. Scaffolding

## 1. General

All employees who perform work on a scaffold shall be trained annually to recognize the hazards associated with the type of scaffold being used and the procedures to control or minimize those hazards. Training is provided by each department that requires the use of scaffolding. Employees shall be trained to demonstrate competency in the following areas:

- Nature of electrical, fall hazards and falling object hazards in the work area;
- Proper use of scaffolds;
- Proper handling of materials on scaffolds;
- Proper erecting, maintaining and disassembling of fall protection systems;
- Proper construction, use, placement and care in handling of scaffolds; and
- Maximum intended load and load-carrying capacities of scaffolds used.

Competent Person

- Must be knowledgeable about the requirements of the various scaffold standards and have sufficient training or knowledge to identify and sufficient authority to correct hazards encountered in scaffold work.

- Must have specific training in and be knowledgeable regarding the structural integrity of scaffolds and procedures needed to maintain them. For example, a competent person must be able to evaluate the effects of such potentially damage-causing occurrences as a dropped load or a truck backing into a supporting leg.

Qualified Person(s)- Must have the training necessary to design scaffolds, solve and resolve problems related to the subject matter, the work or the project by virtue of a recognized degree, certificate, or professional standing, or by extensive knowledge, training and experience.

## 2. Employees Who Need Retraining –

When there is reason to believe that one of our employees lacks the skill or understanding needed for safe work involving the erection, use or dismantling of

scaffolds, the employee shall be re-trained so that the requisite proficiency is regained. Retraining shall be done in at least the following situations:

- Where changes at the worksite present a hazard about which the employee has not been previously trained.
- Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained.
- Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

## 3. Prohibited Practices

The following practices shall never be tolerated.

- Scaffold components manufactured by different manufacturers will never be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained.
- Unstable objects will never be used to support scaffolds or platform units. Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.
- Cross braces will never be used as a means of access.
- The use of shore or lean-to scaffolds is prohibited

**B. Aerial Platforms**

All college employees who are scheduled to perform the functions of operators of aerial platforms or maintenance on aerial platforms shall have been trained on this procedure and either on the same model of aerial platform or one having operating characteristics and controls consistent with the one to be used during actual work site operation. Operator and maintenance training shall include, but not be limited to the following before actually operating the aerial platform or performing maintenance on an aerial platform:

- Know the intended purpose and function of each of the controls.
- Read or been instructed on and understand the manufacturer's operating instructions, maintenance manual and safety rules.

- Read or been instructed on all decals, warnings, and instructions displayed on the aerial platform.

- In addition, maintenance employees shall be instructed in performing frequent (every three months or 150 hours of operation, whichever occurs first) inspections of all aerial platforms maintained by the college.

The operator trainee shall operate the aerial platform in an area free of obstructions under the direction of the qualified person for a time sufficient to determine that the trainee displays proficiency in knowledge and actual operation of the aerial platform. Only properly trained and authorized employees shall be permitted to operate any aerial platform. Only properly trained maintenance employees shall be permitted to perform inspections and required maintenance of aerial platforms.

## 1. Certificate of Training

The college shall verify compliance by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature and affiliation of the person who conducted the training, topics covered original written tests and the signature of the employee. The latest training certification shall be maintained for at three years after employment by the department.

## 2. Retraining

Re-training shall take place every three years, whenever a new model aerial platform is acquired or rented by the college, or when as employee demonstrates less than proficiency in the operation or maintenance of aerial platforms.

**C. Construction**

The college shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

The College shall assure that each employee has been trained, as necessary, by a competent person qualified in the following areas:

- The nature of fall hazards in the work area;
- The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to 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, and other protection to be used;
- The role of each employee in the safety monitoring system when this system is 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 erection of overhead protection; and

## 1. Certification of training

The college shall verify compliance by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature and affiliation of the person who conducted the training, topics covered original written tests and the signature of the employee. The latest training certification shall be maintained for at three years after employment by the department.

## 2. Retraining

When the college has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, the college shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

- Changes in the workplace render previous training obsolete; or
- Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or

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.

# IV RECORD RETENTION

### A. Employee Records

The following records shall be maintained for a minimum of three years after an employee terminates their employment by the responsible department.

- Employees trained as operators of each model of aerial platform.
- Employee trained to perform maintenance and inspections on each model of aerial platform.
- Employees trained to be Competent Person for Scaffolding

- Employees trained to be Qualified Persons for Scaffolding
- Employees trained on Fall Protection for Construction.

**B. Equipment Records**

The following records shall be maintained for a minimum of three years by the responsible department.

- Complete inventory of portable ladders.
- Conduct a yearly ladder inspection by using the Ladder Inspection Form and maintain a record for each.
- Conduct a yearly scaffolding equipment inspection and maintain a written record.
- Written records of the frequent and annual inspections by on each aerial platform owned or rented by the college (if rented for a period of time to require frequent or annual inspection, e.g. 150 hours operation or three months). These records shall include the date of the inspection, model and serial number of the aerial platform, name and affiliation of the person performing the inspection, any deficiencies found, and the corrective action recommended.
- Written records of all repairs accomplished on each aerial platform owned or rented by the college, including the date of the repair, a description of the work accomplished, the work order number, model and serial number of the aerial platform, and the identification of the person(s) performing the work.
- Written records of inspections, repairs, modifications, alterations, and statements of manufacturer's approval for any modifications and alterations shall be maintained for three years after sale or other disposition of the aerial platform

## V. GLOSSARY

**A. Scaffold**

**Access:** The point at which a person can get to and exit a scaffold.

**Base Plates:** A component of a scaffold located on the foot of a pole or frame to assist in stabilizing the scaffold.

**Bracing:** A rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure.

**Competent Person:** One who is capable of identifying existing and predictable hazards or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Galvanic Action:** A reaction which takes place that weakens the strength of metals when two incompatible metals are placed together.

**Guardrails:** A vertical barrier, consisting of top rails, mid-rails, and posts, erected to prevent employees from falling off of a scaffold platform or walkway to lower levels.

**Guying:** A rope, chain or rod attached to something as a brace or guide.

**Hoist:** A manual or power-operated mechanical device to raise or lower a suspended scaffold.

**Lanyard:** A rope used for fastening.

**Lean-to Scaffold:** A supported scaffold that is kept erect by tilting it toward and resting it against a building or structure.

**Non-Adjustable Suspension Scaffolds**: One or more stationary platforms suspended by ropes or other non-rigid means from an overhead structure.

**Outriggers:** The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.

**Platforms:** A work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.

**Power-Operated Hoists:** A hoist that is powered by other than human energy.

**Professional Engineer:** A person who holds a degree from a university or a certification from an association as an Engineer.

**Qualified Person:** One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, work or project.

**Rated Load:** The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.

**Scaffolds:** Any temporary elevated platform (supported or suspended) and it’s supporting structure (including points of anchorage), used for supporting employees or material or both.

**Screw Jacks:** A component of the scaffold that is attached to the frame and the base plate and is used to assist in leveling the scaffold.

**Sill:** A horizontal piece that forms the lowest member or one of the lowest members of a framework or supporting structure.

**Shore Scaffold:** A supported scaffold that is placed against a building or structure and held in place with props.

**Single-Point Adjustable Scaffold:** A suspension scaffold consisting of a platform suspended by one rope from an overhead support and equipped with a means to permit the movement of the platform to desired work levels.

**Stall Load:** The load at which the prime mover of a power-operated hoist stalls or the power to the prime mover is automatically disconnected.

**Stilts:** A pair of poles or similar supports raised footrests, used to permit walking above the ground or working surface.

**Suspension Scaffolds:** One or more platforms suspended by ropes or other non-rigid means from an overhead structure.

**Tying:** To fasten or attach.

**Two-Point Adjustable Scaffold:** A suspension scaffold consisting of a platform supported by hangers suspended by two ropes from overhead supports and equipped with a means to permit the raising and lowering of the platform to desired work levels

**B. Aerial Platform**

**Aerial Platform** - A manually propelled, or vehicle mounted device that has an adjustable position platform, supported from ground level by a structure or vehicle.

**Authorized Personnel** - Employees certified to operate an aerial platform and assigned to perform a specific type of duty or duties at a specific location or locations at a work site.

**Base** - The relevant contact points of the aerial platform that form the stability fulcrum (e.g., wheels, casters, outriggers, stabilizers, etc.)

**Chassis** - The integral part of the aerial platform that provides mobility and support for the elevating assembly.

**Competent Person** - An employee who, because of training and experience, is capable of identifying hazardous or dangerous conditions in powered platform installations and of training employees to identify such conditions.

**Configuration** - All positions in which an aerial platform or any part thereof can be

placed within its intended operating limits.

**Elevating Assembly** - The mechanisms used to position the platform relative to the aerial platform chassis.

**Guardrail System** - A vertical barrier intended to prevent employees from falling to lower levels.

**Hazardous Location** - Any location that contains, or has the potential to contain, an explosive or flammable atmosphere as defined in ANSI/NFPA 505.

**Instability** - the quality or state of being unstable, likely to tip over.

**Insulated Platform** - A platform designed and tested to meet the specific electrical insulation ratings consistent with the manufacturer's identification plate.

**Interlock** - A control or mechanism that, under specific conditions, automatically allows or prevents the operation of another control or mechanism.

**Lanyard** - a flexible line or rope, wire rope, or strap which is used to secure the body belt or body harness to a deceleration device, lifeline or anchorage.

**Modification/Modified** - to make a change(s), temporary or permanent, to an aerial platform that affects the operation, stability, safety factors, rated load or safety of the aerial platform in any way.

**Operator** - A qualified person who controls the movement of the aerial platform.

**Outriggers** - Devices that increase the stability of the aerial platform and that are capable of lifting and leveling the aerial platform.

**Platform** - the portion of the aerial platform intended to be occupied by employees with their necessary tools and materials.

**Platform Height** - The vertical distance measured from the floor of the platform to the surface upon which the machine is supported.

**Qualified Person** - An employee who by reason of knowledge, experience, and training is certified and familiar with the operation to be performed and the hazards involved.

**Rated Work Load** - the designed carrying capacity of the aerial platform as specified by the manufacturer.

**Shall** - The word "shall" is to be understood as mandatory.

**Stability** - The quality, state of being stable, firmly anchored, not likely to tip over.

**Stabilizers** - Devices that increase the stability of the aerial platform but are not capable of lifting or leveling the aerial platform.