



## **Powered Platforms, Manlifts and Vehicle Mounted Work Platforms**

University Facilities

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Approved by: Bob Wells

### **1.0 Program Objective**

Clemson University Facilities (UF) has adopted this program for the safety of employees who work on or around vehicle mounted elevating and rotating work platforms, as regulated by OSHA: §1910.67, §1926.453, and §1926.952.

### **2.0 Purpose and Scope**

Clemson University Facilities (UF) will designate a competent person to oversee all aerial device work procedures. All safety measures and systems are ensured to be in place and correctly installed, all safety procedures will be adhered to, and operational and aerial equipment will be regularly inspected. Clemson University Facilities (UF) has implemented and will enforce the following work practices and procedures to assure that no employee will be exposed to hazards during aerial lifting operations:

- 2.1 All employees will be trained in and familiar with required work practices and procedures in the use of any equipment required, proper personal protective equipment, and safety procedures involving aerial lifting operations.
- 2.2 Only authorized personnel will be permitted to operate an aerial lift.
- 2.3 On a daily basis, before the work platform is used, it must be given a thorough inspections, which will include:
  - Inspection for defects such as cracked welds, hydraulic leaks, damaged control cable, loose wire connections, and tire damage.
  - Inspection of functional controls for proper operation.
- 2.4 Lift controls will be tested each day prior to use to determine that they are in safe working condition.

- 2.5 Vehicles will have a reverse signal alarm audible above the surrounding noise level or the vehicle will be backed up only when an observer signals that it is safe to do so.
- 2.6 For power lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load will be 10 feet.
- 2.7 Any suspect items discovered through inspection must be carefully examined and a determination made by a qualified service person as to whether they constitute a safety hazard. All unsafe items must be corrected before further use of the work platform.
- 2.8 Any work platform not in safe operating condition will be removed from service until it is repaired. All repairs will be made by a qualified service person in conformance with the manufacturer's operating, maintenance, and repair manuals.
- 2.9 Boom, basket, and platform load limits specified by the manufacturer will not be exceeded.
- 2.10 Each work platform will be equipped with a mechanical parking brake, which will hold the unit on any slope it is capable of climbing. When possible, wheel chocks will be installed before using an aerial lift on an incline.
- 2.11 Employees will always stand firmly on the floor of the basket, and will not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
- 2.12 Approved fall protection will be worn and a lanyard attached to the boom or basket when working from an aerial lift.
- 2.13 Aerial vehicular equipment, if provided with outriggers, will be operated with the outriggers extended and firmly set as necessary for the stability of the specific configuration of the equipment. Outriggers may not be extended or retracted outside of clear view of the equipment without outriggers.
- 2.14 When the work area or the terrain prevents the use of outriggers, the equipment may be operated only within its maximum load ratings for the particular configuration of the equipment without outriggers.
- 2.15 Mechanical elevating and rotating equipment used to lift or move material will be used within its maximum load rating and other design limitations for the conditions under which the work is being performed.
- 2.16 A designated employee other than the equipment operator will observe the approach distance to exposed lines and equipment and give timely warnings before the minimum approach distance is reached.

2.17 The following clearances will be maintained when operating aerial work platforms or other equipment under, over, by, or near energized electric power lines:

<b>Minimum Clearance Distances for Equipment</b>		
Voltage	Clearance with Boom Raised	Clearance Boom Lowered No Load in Transit
To 50 kV	10 feet	4 feet
Over 50 kV	10 feet + .4 inch per each 1 kV over 50 kV	10 feet
50 to 345 kV		10 feet
346 to 750 kV		15 feet

2.18 Before using the work platform, the operator will:

- Read and understand the manufacturer’s operating instructions and safety rules, and be trained by a qualified person on the contents of the manufacturer’s instructions and safety rules.
- Read and understand all decals, warnings, and instructions on the work platform.

2.19 Before the work platform is used, the operator will survey the area for hazards such as:

- Untamped earth fills.
- Ditches.
- Drop-offs or holes.
- Bumps & floor obstructions.
- Debris.
- Overhead obstruction and high-voltage conductors.
- Other possible hazardous conditions.

2.20 Before each elevation of the work platform, the operator will:

- Check for overhead obstructions and high-voltage conductors. A minimum distance of ten feet from energized high-voltage conductors must be maintained at all times between the conductors and the operator and platform equipment.
- Ensure the load and its distribution on the platform are in accordance with the manufacturer’s rated capacity. The manufacturer’s recommended load limits must never be exceeded.
- Ensure that outriggers and stabilizers are used if the manufacturer’s instructions require their use.
- Ensure that guardrails are properly installed and gates are closed.

2.21 Before and during driving while the platform is elevated, the operator will:

- Be required to look in the direction of, and keep clear view of, the path of travel and assure that the path of travel is firm and level.
  - Maintain a safe distance from obstacles, debris, drop-offs, holes, depressions, ramps, or other hazards to safe elevated travel.
  - Maintain a safe distance from overhead obstacles.
- 2.22 Personnel will maintain a firm footing on the platform while working thereon unless they are secured by safety harness and lanyard devices fixed to manufacturer-approved anchor points. Use of railings or planks, ladders on any other device on the work platform for achieving additional height is prohibited.
- 2.23 The operator will immediately report defects or malfunctions which become evident during operation and must stop use of the work platform until correction has been made.
- 2.24 Altering or disabling of safety devices or interlocks is prohibited.
- 2.25 Aerial lifts acquired for use on or after Jan. 22, 1973 will be designed and constructed in conformance with ANSI A92.2-1969, including appendix. Aerial lifts required before Jan. 22, 1973 which do not meet the requirements of ANSI A92.2-1969, may not be used after Jan. 1, 1976, unless they have been modified to conform to the requirements of ANSI A92.20-1969.
- 2.26 Each aerial device placed in service will have a conspicuously displayed legible plate or other legible marking verifying the aerial device is designed and manufactured in accordance with the following applicable specifications:
- **ANSI Standard A92.2-1990**, “Vehicle-Mounted Elevating Work Platforms”, which applies to vehicle-mounted devices installed on commercial chassis and covers the following type of units:
    1. Extensible boom aerial devices.
    2. Aerial ladders.
    3. Articulating boom aerial devices.
    4. Vertical towers.
    5. A combination of any of the equipment specified.
  - **ANSI Standard A92.3-1990**, “Manually Propelled Elevating Work Platforms”, which applies to work platforms which are manually propelled, which are vertically adjustable by manual or powered means, and which may be towed or manually moved horizontally on wheels or casters that are an integral part of the work platform base.
  - **ANSI Standard A92.5-1992**, “Boom-Supported Elevating Work Platforms”, which applies to all integral frame, boom-supported elevating work platforms which telescope, articulate, rotate, or extend beyond the base dimensions.

- **ANSI Standard A92.6-1999**, “Self-Propelled Elevating Work Platforms”, which applies to self-propelled vertically adjustable integral chassis work platforms. Such work platforms are power operated with primary controls for all movement operated from the platform.

2.27 The following information will be displayed on all work platforms in a clearly visible, accessible area and in as permanent a manner as possible:

- Warnings, cautions, or restrictions for safe operations in accordance with ANSI requirements.
- The rated work load will be clearly displayed at each entrance to the platform.

### 3.0 Vehicle Mounted Elevating & Rotating Work Platforms

#### 3.1 Basic Types of Elevating Work Platforms and Aerial Devices

There are two basic types of elevating work platforms- boom and scissor. Both types come in:

1. “On-Slab” models for use on smooth hard surfaces such as concrete or pavement.
2. “Rough-Terrain” models for use on firm level surfaces such as graded and compacted soil or gravel.”

Both types share three major components: base, lifting mechanism, and platform assembly.

#### 3.2 Scissor-Type Machines

These are raised and lowered by hydraulic pistons and an expanding scissor mechanism. Platforms are available in various configurations with different capabilities for extension and movement. Some have extendable platforms or platforms that can rotate. Extendable platforms should be retracted before raising or lowering the device.

#### 3.3 On-Slab Units

- Not designed for uneven or sloping ground.
- Normally have solid rubber tires.
- Most have “pothole protection”- a metal plate lowered close to the ground to afford some protection against inadvertent movement into depressions or debris.

#### 3.4 Rough-Terrain units

- Similar in design to on-slab units.
- Built to handle rigorous off-slab challenges.
- Normally have wider wheel bases, larger wheels, and pneumatic tires.

- Some fitted with outriggers for extra stability.
- Lifting mechanism is hydraulic.

Scissor-lifts range in capacity from 500 to several thousand pounds. They are available with platform heights often reaching 50 feet or more.

Scissor-lifts must be set up on stable, level ground, even with outriggers deployed. A slight imbalance or instability is amplified when the machine is raised.

Although fixed to the platform, the controls are moveable from one side of the platform to the other. This enables the operator to see the path of travel. The controls must be oriented correctly so that the operator does not inadvertently move the machine in the wrong direction. Many machines have color-coded directional arrows on the chassis to aid the operator in moving the machine.

### 3.5 Self-Propelled Boom-Supported Platforms

- Normally fitted with rough-terrain undercarriages.
- Some smaller on-slab units.
- Platforms have lifting capacity of about 500 pounds or two workers.
- Lack capacity of scissor-type machines; not intended for lifting materials.

### 3.6 Booms

- Telescopic, articulating, or combination of both.
- Raised and extended by hydraulic cylinders.
- Can reach up to 150 feet.
- Can extend well beyond the wheelbase.

As with mobile crane, stability decreases with length of boom and boom angle as the center of gravity moves in relation to the platform position. The machine will overturn if the center of gravity moves outside the machine's base.

Machines come with load charts that show safe operating configurations. Machines with booms long enough to cause overturning at low boom angles are required to have radius-limiting interlocks to prevent operation in unstable configurations. The reach chart indicates the safe operating configurations for a machine operating on a level surface. The reach diagram shows the safe operating envelope. The machine does not achieve its maximum height directly overhead, nor does it achieve its maximum reach at ground level.

Users must be familiar with the operating range of the individual make and model of the equipment they are using. This knowledge is essential in order to position the machine correctly and reach the work location safely.

### 3.7 Non Self-Propelled or Push-Arounds

As the name indicates, these units are not self-propelled and must be transported from one location to another with an independent power source or manually in the case of smaller devices.

The machines are intended primarily for use on smooth, level, hard surfaces or on-slab conditions. Some trailer-mounted units are available.

Many of these devices can fold up to pass through a standard door and can be transported by pickup truck. As a result, they are suitable for maintenance or renovation work.

### 3.8 Push- Arounds

- Normally raised and lowered by hydraulic cylinders.
- Platform capacities vary from 300 to 1000 pounds or more but are generally less than 500 pounds.
- Devices with capacity less than 500 pounds are not recommended for construction- this type is better suited to maintenance activities.
- Platforms usually do not exceed 36 feet in height.
- As platform is raised, risk of overturning increases.

### 3.9 Equipment Selection

Elevating work platforms are designed for different uses. It is essential to select the appropriate equipment for the job.

### 3.10 Typical Mistakes

- Using an on-slab machine on rough terrain.
- Using a unit undersized with respect to height, reach, and lifting capacity.
- Lifting large materials that overhang the platform.
- Using a scissor lift where the reach of a boom-type machine is needed.
- Extending the platform with planks, ladders, or other devices because the machine cannot reach the required height.

### 3.11 Factors to Consider

- Capacity- does the machine have the lifting capacity, the reach, and the height to complete the task?
- Surface Conditions- are the surface condition hard or soft, sloped or level? Will the ground have an effect on the type of machine selected?
- Platform Size and Configuration- do you need a regular or extendable platform? Is rotation required? Are there space restrictions to consider?
- Mobility- is a boom type better suited than a scissor lift to the task at hand?
- Material to be lifted- will the machine be able to lift the size and weight of material required for the job?

- Access- will the machine be able to travel around the workplace safely? Are there obstructions or depressions that will restrict the use of certain machines?
- Operator Skill or Training- are the people in the site competent to operate the machine? If a propane-powered engine is used, has the operator received propane training?
- Work Environment- if the work is to be done indoors, or in a poorly ventilated area, will an electrically powered machine be required?

### 3.12 Fundamental Elevating Work Platforms Hazards

The following are some of the basic hazards to be aware of during operations:

- Machine Tipping or Overturning- many factors cause instability- sudden stops, depressions, drop-offs, overreaching, overloading, etc. Overturning and tipping result in many fatalities and injuries.
- Overriding Safety Features- disarming features such as the tilt or level warning and the deadman switch can prevent operators from knowing when they are in a dangerous situation. Overriding the deadman switch has resulted in fatalities; so has the malfunction of the tilt warning.
- Falls from Elevated Platforms- many falls occur because workers get in a hurry and fail to observe standard fall protection procedures. Many such falls cause serious injury or even fatalities.
- Makeshift Extensions- when the machine cannot reach the working height desired, do not compensate by using scaffold planks, ladders, blocks of wood, or other makeshift arrangements. Such practices lead to falls and machine instability.
- Overloading the Platform- elevating work platforms, overloaded or loaded unevenly can become unstable and fail. Boom-type machines are especially sensitive to overloading. Always stay within the operating range specified by the manufacturer.
- Accidental Contact- many elevating work platforms have blind spots. Moving the machine or platform may cause contact with workers or with obstacles. Use a designated signaler on the ground to guide the operator when the path of travel is not clear or access is tight.
- Improper Maintenance or Modifications- elevating work platforms should be maintained by competent workers in accordance with manufacturer's instructions. No modifications should be made to the machine without the manufacturer's approval.
- Improper Access- do not enter or leave the platform by climbing the scissors or the boom. Do not use extension ladders to gain access. Ladders exert lateral loads on the platform that can cause overturning. For the safest access, lower the machine completely.
- Moving with Platform Raised- lower the platform before moving the machine unless:
  - The machine is designed to move with platform raised.



- The supporting surface is smooth and level. Slight dips and drops are amplified when the platform is raised and can cause the machine to overturn.
- Improper Refueling- take care when refueling. Gasoline, for instance, should be kept in approved containers and dispensed to prevent spills and sparking.
- Pinch Points- clothing, fingers, and hands can get caught in scissor mechanisms. As platforms are raised, machines may sway. Workers can be pinched between guardrails and the structure. Position the platform so that work takes place above guardrail height.

### 3.13 Responsibilities During Elevating Work Platform Operations

Because elevating work platforms are often rented from an equipment supplier, there is confusion as to the responsibilities of the parties involved. Generally, the responsibilities can be summarized in the following way:

#### 3.13.1 The owner or supplier must ensure that the machine:

- Is maintained in good operating condition.
- Conforms to appropriate regulations and standards.
- Includes the operator's manual and correct load rating charts.

#### 3.13.2 Clemson University Facilities (UF) and supervisors on projects must:

- Ensure that the operator is fully trained and is competent to operate the particular equipment being used.
- Ensure that the machine has the correct load rating capacity for the job.
- Maintain the equipment and all its protective devices.
- Maintain a daily inspection log for each platform.
- Ensure that workers use appropriate personal protective equipment.
- Keep the manufacturer's operating manual with the equipment.
- Train workers on each type of equipment that they will be using.

#### 3.13.3 The operators and worker using the equipment must:

- Receive adequate training to be fully competent.
- Only operate the machine when competent.
- Operate the machine in a safe manner as prescribed by the manufacturer and according to company safety and health policies.
- Inspect the equipment each day or each shift before use.
- Perform function tests before use.
- Report any defects to the supervisor.
- Read, understand, and obey the manufacturer's safety rules, including the operating manual and warning decals. When a defect is reported to the supervisor, the equipment must be taken out of service until the repairs are completed and the equipment is inspected and approved for use.

### 3.13.4 Stability and Tipping

In general, elevating work platforms are well manufactured and are safe to use within their specific limitations. However, as with any equipment or tool, there are dos and don'ts to follow.

One of the most dangerous hazards in operating elevating work platforms is tipping over. This can be caused by one or more of the following factors:

- Sudden movement of the unit or parts of the unit when elevated.
- Making sudden stops while in motion with platform elevated.
- Uneven or overloading of the platform.
- Traveling or operating on a slope or uneven terrain.
- Changing the weight distribution of the machine by replacing parts with others of a different weight or adding attachments not approved by the manufacturer.
- Holes or drop-offs in the floor surface causing one wheel to drop suddenly.
- Operating the equipment in windy conditions (refer to the operator's manual for safe operating conditions).

It is important that users understand what makes a platform stable and what causes it to overturn. To understand stability, one must understand the concept of center of gravity, tipping axles (or tipping point), and forces that shift the center of gravity. Stability is resistance against tipping over. Stability depends on the location of the center of gravity in relation to the tipping axis.

### 3.13.5 Center of Gravity

Every object has a center of gravity. It is the point where the object's weight would be evenly distributed or balanced. If a support is placed under that point, the object would be perfectly balanced. The center of gravity is usually located where the mass is mostly concentrated. However, the location does not always remain the same. Any action that changes the machine's configuration – such as raising the platform, extending the boom, or traveling on a slope – can change the location of the center of gravity.

### 3.13.4 Factors Affecting Stability

- Dynamic Forces- forces generated by movement or change of movement. For example, applying the brakes suddenly or traveling too fast around corner can cause instability. Sudden stops while raising or lowering the platform can also cause instability.
- Traveling- traveling the platform over rough terrain or uneven ground can also cause instability. It is important to lower the platform fully or to retract telescoping sections while traveling, particularly on even surfaces.
- Equipment Inspection- all components that bear directly on the safe operation of the EWP and can change from day to day must be inspected daily. Inspection is mostly visual which should be done in a quick but thorough manner. Users

must check the operator's manual for a complete list of pre-operational checks.

## 4.0 Minimum Requirements

### 4.1 Before climbing onto the platform, check:

- Tires for proper pressure and wheels for loose or missing lug nuts.
- Steer cylinder, linkage, and tie rods for loose or missing parts, damage, & leaks.
- Hydraulic oil for leaks and fluid level.
- Hydraulic hoses, lift cylinder(s), and connections for leaks or loose connections.
- Fuel supply- adequate fuel, filler cap in place, no damage, leaks, or spills.
- Battery for fluid level and state of charge.
- Proper connection of all quick-disconnect hoses.
- Structural components for damage, broken parts, cracks in welds, including scissor arms, outrigger arms, and pads.
- Ladder or steps for damage and debris (ladder must be firmly secured to the platform and relatively free of grease, mud, and dirt).
- Beacon and warning lights for missing and defective lenses or caps.
- Ground controls (manual and powered) - including emergency stop switch and platform lower/lift switch – for proper function and damaged and missing control sticks/switches.
- Decals and warning signs to make sure they are clean, legible, and conspicuous.

### 4.2 After mounting the platform, check:

- Platform assembly for missing or loose parts, missing or loose lock pins & bolts.
- Platform floor for structural damage, holes, or cracked welds and any dirt, grease, or oil that can create a hazard.
- Operator's manual to make sure it is in place.
- Extendable platform deck for ease of extension/retraction and proper function of locking position of platform.
- Guardrails to make sure they are in place and secure.
- Access gate for ease of movement, missing parts, latch, and locking capabilities.
- All fall protection anchorage points.
- All control mechanisms for broken or missing parts.
- All emergency controls for proper function – stopping, descending, master OFF switch.
- All safety devices such as tilt and motion alarms for malfunction.
- Swivels for freedom of rotation.
- Scissors for smooth movement up and down.
- Brakes for stopping capabilities.

- Horn for proper function.

## 5.0 Manuals, Signs, and Decals

5.1 Signs clearly visible to the operator at the controls must indicate:

- The equipment's rated working load.
- All limiting operating conditions, including the use of outriggers, stabilizers, and extendable axles.
- The specific firm, level surface conditions required for use in elevated position.
- Such warnings as may be specified by the manufacturer.
- Other than for a boom-type elevating work platform, the direction of machine movement for each operating control.
- The name/number of the ANSI standard to which the platform was designed.
- The name and address of the owner.

5.2 In addition to the above, ANSI standards require the following signs:

- The make, model, serial number, and manufacturer's name and address.
- The maximum platform height.
- The maximum travel height, if not equal to the maximum platform height.
- The nominal voltage rating of the batteries, if battery-powered.
- A warning to study the operating manual before using the equipment.
- A statement as to whether or not the platform is insulated.
- A notice outlining the required inspections.
- The capacity in each configuration.
- Diagrams/description of various configurations in which the platform can be used.
- Warnings against replacing, without the manufacturer's consent, components critical to the machine's stability – for example, batteries or ballasted tires with lighter weight components (the minimum weights of such components must be specified)

Many of these signs are vital to the operations of the machine and the protection of workers. All signs and decals must be kept clear of dust and grease so they can be easily read. Torn or damaged signs must be replaced.

Standards also require that the manufacturer provide a manual containing the following information:

- Description, specifications, and capacities of the platform.
- The operating pressure of the hydraulic or pneumatic system that is part of the work platform.
- Instructions regarding operation and maintenance, including recommended daily, weekly, and monthly inspection checklists.
- Information on replacement parts.

The manual must be stored on the equipment in a weatherproof storage container.

## 6.0 Definitions

Aerial Device or Aerial Work Platform- means any vehicle-mounted device, telescoping or articulating or both, that is designed and manufactured to raise personnel to an elevated work position on a platform supported by scissors, masts, or booms.

Aerial Ladder- means an aerial device that consists of a single- or multiple-section rung ladder.

Authorized Boom Platform- means an aerial device that has two or more hinged boom sections.

Authorized Person- means a person who is approved and assigned to perform specific types of duties by the employer and who is qualified to perform those duties because of his or her training or experience.

Boom- an elevating member, the lower end of which is attached to a rotating or non-rotating base that permits elevation of the free or outer end in vertical plane.

Commercial Chassis- means a vehicle that is built for over-the-road (roadway) travel.

Elevating Work Platform- a device designed to elevate a platform in a substantially vertical axis (Vertical Tower, Scissor Lift).

Extensible Boom Platform- means an aerial device, except for the aerial ladder-type, with a telescopic or extensible boom. A telescopic derrick with a personnel platform attachment will be considered to be an extensible boom platform when used with a personnel platform.

Instability- means a condition of a mobile unit in which the sum of the moments tending to overturn the unit is equal to or exceeds the sum of the moments tending to resist overturning.

Insulated Aerial Devices- means an aerial work platform that is designed with dielectric components to meet specific electrical insulating ratings for work on or near energized lines and apparatus.

Mechanically Positioned= means that the elevating assembly, whether a mechanical (cable or chain), hydraulic, pneumatic, electric or other powered mechanism, is used to raise or lower the platform.

Mobile Unit- means a combination of an aerial device, vehicle and related equipment.

Override- means to transfer or to take away platform control functions by another station.

Pin-On Platform- a platform other than basket or tub, without a guardrail which is attached to a boom by hinge or pivot connection allowing movement in the vertical plane, including such hinge down platforms used at the upper end of aerial ladders

Platform- means the portion of an aerial work platform, such as a bucket, basket, stand, cage, or the equivalent, that is designed to be occupied by personnel and is a component of an aerial device.

Qualified Person- means a person who possesses a recognized degree, certificate, professional standing, or skill and who, by knowledge, training, and experience, has demonstrated the ability to deal with problems relating to the subject matter, the work, or the project.

Qualified Line Clearance Tree Trimmer- means an employee trained to work in proximity of energized power transmission and distribution lines. An employee in training program is included in this definition.

Qualified Lineman- means an employee trained and authorized to work on or near energized lines. An employee in a training program is included in this definition.

Qualified Telecommunications Employee- means an employee trained to work on communication lines in the proximity of energized power transmission and distribution lines.

Rated Work Load- the safe design live load carrying capacity of the work platform.

Safety Factor- means the ratio of the breaking strength of a piece of material or object to maximum designed load or stress applied when in use.

Stability- a condition of a work platform in which the sum of the moments, which tends to overturn the unit is less than the sum of the moments tending to resist overturning.

Vehicle- means any carrier that is not manually propelled.

Vehicle Mounted Elevating and Rotating Work Platform- means an aerial device.

Vertical Tower- means an aerial device designed to elevate a platform in a substantially vertical axis on a level surface.

Yield Point- means the point where material begins to take a permanent deformation.

## 7.0 Safe Practices

Operators must be familiar with the requirements for the specific machine they will use:

- The manufacturer's operating manual.
- The manufacturer's warning and caution signs on the machine.
- The location of all emergency controls and emergency procedures.
- The daily maintenance checks to perform.

NOTE: Never operate equipment on which you have not been trained or which you are not comfortable operating. Your safety and that of others on site depends on competent, knowledgeable operation of the equipment.

## 8.0 Work Area Inspection

Before operating elevating work platforms and aerial devices, check the work area for:

- Drop-offs or holes in the ground.
- Slopes.
- Bumps or floor obstructions.
- Debris.
- Overhead obstructions.
- Overhead wires, power lines, or other electrical conductors.
- Hazardous atmospheres.
- Adequate operating surface – ground or floor.
- Sufficient ground or floor support to withstand all forces imposed by the platform in every operating configuration.
- Wind and weather conditions.

## 9.0 References

9.1 29 CFR § 1910.67

- 9.2 29 CFR § 1926.453
- 9.3 29 CFR § 1926.952
- 9.4 ANSI Standard A92.2-1990
- 9.5 ANSI Standard A92.3-1990
- 9.6 ANSI Standard A92.5-1992
- 9.7 ANSI Standard A92.6-1999