

**AERIAL DEVICE OR AERIAL
WORK PLATFORM**

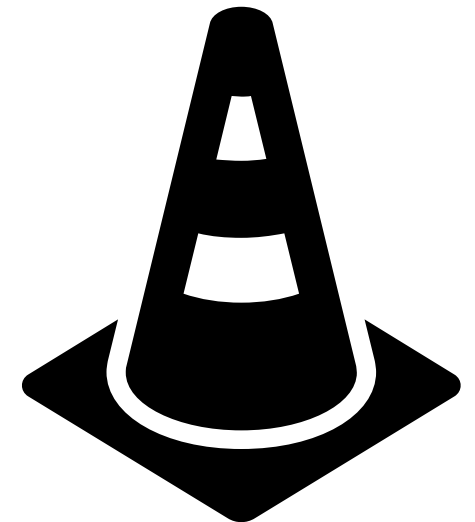
TRAINING

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.
- Articulating 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 so 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).
- Insulated Aerial Device - 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.

ELEVATED WORK PLATFORMS (Aerial Lifts)

- 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 a training program is included in this definition.



SAFE PRACTICES



- Aerial lifts must be designed and constructed in conformance with the applicable requirements of the American National Standards for "Vehicle Mounted Elevating and Rotating Work Platforms", ANSI A92.2.
- Each work platform will be inspected, maintained, repaired, and kept in proper working order in accordance with the manufacturer's maintenance and repair manuals

SAFE PRACTICES

ON A DAILY BASIS, BEFORE THE WORK PLATFORM IS USED, IT MUST BE GIVEN A THOROUGH INSPECTION, 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
- Lift controls will be tested each day prior to use to determine that such controls are in safe working condition
- Tests will be made at the beginning of each shift during which the equipment is to be used to determine that the brakes and operating systems are in proper working condition
- Critical safety components of mechanical elevating and rotating equipment whose failure would result in a free fall or free rotation of the boom will receive a thorough visual inspection before use on each shift
- 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
- 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

SAFE PRACTICES

- 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
- 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
- Aerial lifts may be "field modified" for uses other than those intended by the manufacturer provided the modification has been certified in writing by the manufacturer or by any equivalent entity
- Manufacturer's boom, basket, and platform load limits will not be exceeded
- 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.
- 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.
- Approved fall protection will be worn, and a lanyard attached to the boom or basket when working from an aerial lift.

ELEVATED WORK PLATFORMS (AERIAL)

- No aerial vehicular equipment having an obstructed view to the rear may be operated on off highway jobsites where any employee is exposed to the hazards created by the moving the vehicle, unless the vehicle has a reverse signal alarm audible above the surrounding noise level or the vehicle is backed up only when a designated employee signals that it is safe to do so
- Aerial vehicular equipment 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 operator unless all employees are outside the range of possible equipment motion
- 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
- 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
- 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

ELEVATED WORK PLATFORMS (AERIAL)

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

Up to 50 kV
-10 feet of distance

Over 50 kV
-10 feet + 0.4 inch per each 1 kV over 50 kV

Before using the work platform, the operator will:

- Read and understand the manufacturer's operating instructions and safety rules, and be trained on them by a qualified person
- Read and understand all decals, warnings, and instructions on the work platform
- 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 and floor obstructions; debris; overhead obstructions and high voltage conductors; other possible hazardous conditions

ELEVATED WORK PLATFORMS (AERIAL)

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 that 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 outriggers and stabilizers are used according manufacturer's instructions
- Ensure that guardrails are properly installed, and gates are closed

ELEVATED WORK PLATFORMS (AERIAL)

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

- Be required to look in the direction of, and keep a 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
- The operator will limit travel speed according to conditions. Conditions to be observed are:
 - Ground surface, congestion, slope, location of personnel, and other factors that may create a hazard of collision or injury to personnel
- 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 or any other device on the work platform for achieving additional height is prohibited

ELEVATED WORK PLATFORMS (AERIAL)

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



- 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
- Altering or disabling of safety devices or interlocks is prohibited
- Stunt driving and horseplay is prohibited
- An aerial device that does not meet the requirements will not be used unless it has been inspected and modified as required to conform to the essential stability, structural, electrical insulation, and operational requirements of ANSI A92.2

ELEVATED WORK PLATFORMS (AERIAL)

- 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, "Vehicle-Mounted Elevating Work Platforms", which applies to vehicle mounted devices installed on commercial chassis and covers the following type of units:
 - Extensible boom aerial devices
 - Aerial ladders
 - Articulating boom aerial devices
 - Vertical towers
 - A combination of any of the equipment specified
- ANSI Standard A92.3, "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

ELEVATED WORK PLATFORMS (AERIAL)

- ANSI Standard A92.5, "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, "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

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 operation in accordance with ANSI requirements
- The rated workload will be clearly displayed at each entrance to the platform

VEHICLE MOUNTED ELEVATING AND ROTATING WORK PLATFORMS

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 used on firm level surfaces: graded and compacted soil or gravel.

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

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.

On-Slab Units

- Not designed for uneven or sloping ground
- Normally have solid rubber tires
- Generally powered by rechargeable DC battery
- Some are powered by internal combustion engine, either gasoline or propane
- Most have “pothole protection” - a metal plate lowered close to the ground to afford some protection against inadvertent movement into depressions or debris

SCISSOR-TYPE MACHINES

Rough-Terrain Units

- Similar in design to on-slab machines
- Built to handle rigorous off-slab challenges
- Normally have wider wheelbases, larger wheels, and pneumatic tires
- Some fitted with outriggers for extra stability
- Usually powered by internal combustion engines: gasoline, diesel, or propane
- DC Battery powered units are also available, but are not common
- 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.

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
- Usually powered by an internal combustion engine: gasoline, diesel, or propane

SELF-PROPELLED BOOM-SUPPORTED PLATFORMS

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 cranes, 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.

NON-SELF-PROPELLED OR PUSH-AROUNDS

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 the smaller devices. The machines are intended primarily for use on smooth, level, hard surfaces or on-slab conditions. Some trailer-mounted units are available. Some can fold up to pass through a standard door and can be transported by pick-up truck. As a result, they are suitable for maintenance or renovation work.

PUSH-AROUNDS

- Raising mechanism normally powered by gasoline, propane or electric motors
- Normally raised and lowered by hydraulic cylinders
- Platform capacities vary from 300 to 1000 pounds or more
- 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
- Extra care required when operating at maximum height

EQUIPMENT SELECTION

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

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

EQUIPMENT SELECTION

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 conditions 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?
- 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 on 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?

FUNDAMENTAL ELEVATING WORK PLATFORM HAZARDS

- Machine Tipping or Overturning - Many factors cause instability - sudden stops, depressions, dropoffs, 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 they are in danger
- Overhead Power line Contact - Contacting overhead wires can cause electrocution
- 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

FUNDAMENTAL ELEVATING WORK PLATFORM HAZARDS

- Failure to Cordon Off -
 - o Elevating work platforms have been struck by other construction equipment or oncoming traffic when the work area is not properly marked or cordoned off
 - o Workers have been injured when they inadvertently entered an unmarked area and were struck by falling material, tools, or debris
 - o In unmarked areas, workers have also been injured by swinging booms and pinched by scissor mechanisms
- 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 Blocking During Maintenance - Failing to block, or improperly blocking the machine, boom, or platform can cause serious crushing injuries and property damage.

FUNDAMENTAL ELEVATING WORK PLATFORM HAZARDS

- **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 the Platform Raised** – Lower the platform before moving the machine unless: The machine is designed to move with the platform raised, or 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

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 do's 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)

STABILITY AND TIPPING

- 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 axis (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.

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 were 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.

STABILITY AND TIPPING

TIPPING AXIS AND AREA OF STABILITY

When an EWP turns over, it tips around an axis or point. This is called the tipping axis or tipping point. EWPs typically have four tipping axes - front, back, left, and right.

Each EWP has its own area of stability. This varies from platform to platform and from model to model. In most cases, the area of stability is bound by the four tipping axes (or the four tires or outriggers). The platform is stable as long as the center of gravity remains inside the area of stability. This is the key to safe operation.

When the center of gravity shifts beyond the area of stability, the machine will tip over. Some factors that can cause a shift beyond the stability area are overloading, moving on excessively sloped ground, a sudden drop of one wheel, and shock loading.

Raising the platform also raises the EWP's center of gravity. When a scissor lift is situated on a slope, and the platform is raised, the platform's center of gravity will move toward the tipping axis. If the center of gravity moves beyond the tipping axis, the platform will overturn.

STABILITY AND TIPPING

Boom-supported aerial devices work in the same way. When the boom is extended outward, the center of gravity moves outwards towards the tipping axis. The aerial device will overturn if the boom is extended such that the center of gravity moves beyond the axis. Boom-type machines have an interlocking system that prevents the machine from moving into an unstable configuration.

FACTORS AFFECTING STABILITY

DYNAMIC FORCES

Dynamic forces are forces generated by movement or change of movement. For example, applying the brakes suddenly or traveling too fast around corners can cause instability - as in a car or van. Sudden stops while raising or lowering the platform can also cause instability.

TRAVELING

Traveling the platform over rough or uneven ground can also cause instability. Lower the platform fully or retract telescoping sections while traveling, particularly on uneven surfaces.

MINIMUM REQUIREMENTS

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, and leaks
- Hydraulic oil for leaks and fluid level. Hydraulic hoses, lift cylinder(s), and connections for leak 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

MINIMUM REQUIREMENTS

AFTER MOUNTING THE PLATFORM, CHECK:

- Platform assembly for missing or loose parts, missing or loose lock pins and bolts
- Platform floor for structural damage, holes, or cracked welds and any dirt, grease, or oil
- 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

MANUALS, SIGNS, AND DECALS

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



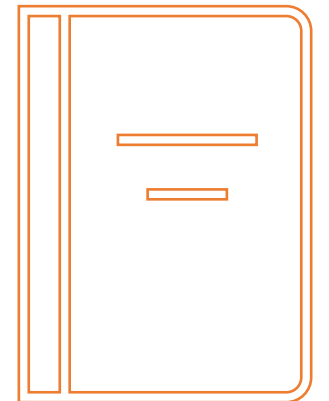
MANUALS, SIGNS, AND DECALS

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 operation 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.

MANUALS, SIGNS, AND DECALS

- Standards require the manufacturer provide a manual that contains:
- 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.



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

GENERAL SAFETY GUIDELINES FOR EWPS AND AERIAL DEVICES

- Always check for overhead power lines before moving the machine or operating the platform. The limits of approach from overhead power lines must be observed. If work must be done within these limits, make arrangements with the owner of the utility to have the power line de-energized. Allow for movement or sway of the lines as well as the platform. Be aware of overhanging tools or equipment
- Wear a full body harness and tie off to a designated tie-off point while the machine is moving
- Do not leave the machine unattended without locking it or otherwise preventing unauthorized use
- Do not load the platform above its Rated Working Load (RWL). Wherever possible, keep the load below $\frac{2}{3}$ of the RWL
- Make sure that all controls are clearly labeled with action and direction
- Keep guardrails in good condition and ensure that gate is securely closed before moving the platform. Do not remove guardrails while the platform is raised
- Shut off power and insert the required blocking before maintenance or servicing
- Deploy stabilizers or outriggers according to the manufacturer's instructions
- Position the boom in the direction of travel where possible
- Keep ground personnel away from the machine and out from under platform
- Do not access the platform by walking on the boom

GENERAL SAFETY GUIDELINES FOR EWPS AND AERIAL DEVICES

- Do not try to push or move the machine by telescoping the boom
- Do not use the machine as a ground for welding
- Do not use a boom-supported platform as a crane
- Do not operate the equipment in windy conditions. For safe wind speeds, refer to the operator's manual
- Do not place the boom or platform against any structure to steady either the platform or the structure
- Secure loads and tools on the platform so that machine movement will not dislodge them
- Make sure that extension cords are long enough for the full platform height and will not be pinched or severed
- Use three-point contact and proper climbing techniques when mounting or dismounting from the machine



Important 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.

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 condition, wind and weather conditions



AERIAL LIFTS – FALL PROTECTION

The fall protection required for persons who work on aerial lifts depends on the type of aerial lift used. The table below shows acceptable fall protection.

TYPE OF LIFT

FALL PROTECTION REQUIRED

Vehicle-Mounted Elevating and Rotating
Work Platforms
(ANSI A92.2 devices)

Platforms other than buckets or baskets must include guardrail systems – guardrails, a midrail, and toeboards. Each person who works on a boom-supported platform must wear a body harness and lanyard attached to the boom or basket.

Manually Propelled Elevating Aerial
Platforms
(ANSI A92.3 devices)

The platform must have a guardrail at least 42 inches \pm 3 inches above the floor, a midrail, and toeboards at least 4 inches high.

Boom-Supported Elevating Work
Platforms
(ANSI A92.5 devices)

The platform must have a guardrail at least 42 inches \pm 3 inches above the floor, a midrail, and toeboards at least 4 inches high. Each worker on the platform must wear a body harness and lanyard attached to the boom or platform.

Self-Propelled Elevating Work Platforms
(ANSI A92.6 devices)

The platform must have a guardrail 42 inches \pm 3 inches above the floor, a midrail, and toeboards at least 4 inches high.

FALL PROTECTION FOR ELEVATING WORK PLATFORMS

Personnel will maintain firm footing on the platform while working on the platform. The use of railings, planks, ladders, or any other devices on the platform for achieving additional height is prohibited

A safety harness that has a lanyard which complies with construction safety standard "Fall Protection" and which is affixed to attachment points provided and approved by the manufacturer will be provided by Southam and Associates and Affiliates and used by any occupant of an aerial work platform described in this section. A fall arrest system will only be used where the aerial lift is designed to withstand the vertical and lateral loads caused by an arrested fall

Belting off to an adjacent pole, structure, or equipment while working from an aerial work platform is prohibited

An employer will not allow employees to exit an elevated aerial work platform, except where elevated work areas are inaccessible or hazardous to reach. Employees may exit the platform with the knowledge and consent of Southam and Associates and Affiliates. When employees exit to unguarded work areas, fall protection will be provided and used as required

FALL PROTECTION FOR AERIAL DEVICES

- 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
- Boom and basket load limits specified by the manufacturer will not be exceeded
- A safety harness will be used with a lanyard attached to the boom or basket when working from an aerial lift. The safety harness and lanyard will be provided by Southam and Associates and Affiliates. An in-plant, industrial-type aerial device used on a level surface and equipped with a platform with approved railings is exempt from this rule
- A boom platform will be provided with a rail or other structure around its upper periphery that will be not less than 38 inches above the floor of the platform and with a toeboard not less than 4 inches high. A basket of a cherry picker will be considered to meet this requirement. A platform may have the guardrail removed from the working side if a safety lanyard is worn by the employee on the platform
- Belting off to an adjacent pole, structure, or equipment while working from an aerial device will not be permitted
- Climbers will not be worn while on an aerial device unless gaff guards are provided

OSHA REGULATIONS INCLUDE THE FOLLOWING REQUIREMENTS

- Elevating work platforms must be engineered and tested to meet the relevant standard for that equipment
- Aerial devices must be checked each day before use by a trained worker
- The owner or supplier must keep a log of all inspections, tests, repairs, modifications, and maintenance
- The log must be kept up to date and include names and signatures of persons who performed inspections and other work
- Workers must be given oral and written instruction before using the platform for the first time. Instruction must include items to be checked daily before use

Vehicle Mounted Elevating and Rotating Work Platforms and Aerial Devices

This section provides for the safe operation and maintenance by Southam and Associates and Affiliates and the safe use by the employee of vehicle mounted elevating and rotating work platforms in, around, and about a place of employment. Firefighting equipment and powered industrial trucks are not included in these rules.



- Operate an aerial device only after being trained and authorized by Southam and Associates and Affiliates
- Report known defects and hazards concerning an aerial device to the supervisor

EQUIPMENT INSTRUCTIONS AND MARKING

Each unit will have a manual containing instructions for maintenance and operations. If a unit can be operated in different configurations, then these will be clearly described, including the rated capacity in each configuration.

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 A92.2 - Vehicle Mounted Elevating and Rotating Aerial Devices
- ANSI A92.3 - Manually Propelled Elevating Work Platforms
- ANSI A92.5 - Boom Supported Elevating Work Platforms
- ANSI A92.6 - Self-Propelled Elevating Work Platforms

The referenced plates will contain the following data, when applicable:

- Make, model, and manufacturer's serial number
- Rated capacity
- Maximum capacity at the maximum platform height
- Platform height
- Maximum travel height
- Maximum recommended operating pressure of hydraulic or pneumatic system(s) or both
- Caution or restrictions of operation or both
- Operating instructions
- Manufacturer's rated line voltage (dielectric capability)

EQUIPMENT INSTRUCTIONS AND MARKING

Alternative configurations will require in addition to the previous:

- Charts, schematics, or scales of capacities in operating positions
- Cautions, restrictions, of operation of all alternate or combinations
- Employees will be instructed in the proper use of the platform

All aerial devices and elevating work platforms will be assembled and erected in accordance with these rules and will be maintained in safe operating condition.

All electrical tests will conform to the requirements of the applicable the National Fire Protection Association NFPA 70 Standard or equivalent DC voltage test approved by the equipment manufacturer or equivalent entity.

FACTORS OF SAFETY IN DESIGN OF WORK PLATFORM ASSEMBLY

- Where the platform is supporting its rated workload by a system of wire ropes or lift chains, or both, the safety factor of the wire or chain will not be less than 6 to 1
- All critical components of a hydraulic or pneumatic system used in a work platform will have a bursting strength that exceeds the pressure attained when the system is subjected to the equivalent of four times the rated workload. Critical components are those in which a failure would result in a free fall or free rotation of the boom. All noncritical hydraulic components will have a bursting safety factor of at least 2 to 1
- Automatic safety devices or systems will be provided to prevent free fall of the work platform should a failure of the power supply or elevating system occur

CONSTRUCTION, MODIFICATION, REMOUNTING, TESTING, AND USE

- An aerial device purchased, modified, or remounted must meet the requirements of ANSI A92.2
- A permanent label or tag will be affixed to an aerial device purchased, modified, or remounted certifying compliance
- An employer modifying the basic design of an aerial device will secure approval of the modification in writing from the manufacturer of the aerial device, a firm offering an equivalent service, or a qualified engineer knowledgeable in the aerial device operations. The results of the modification will be at least as safe as the original design
- An aerial device will bear a permanent plate stating the designed rating capacity
- An aerial device will be mounted on a vehicle capable of sustaining, or reinforced to sustain, the imposed load. The vehicle will be a stable support for the aerial device
- The lifting and outrigger system of an aerial device will be equipped with a means, such as but not limited to, a pilot operated check valve to ensure that the system will not permit the work platform to drop in a free fall in event of a power or hydraulic line failure
- An aerial device that does not meet the requirements ANSI A92.2 will not be used unless it has been inspected and modified as required to conform to the essential stability, structural, electrical insulation, and operational requirements
- In addition to the welding requirements prescribed in ANSI A92.2, an aerial device will conform to the AWS D2.0-69

MAINTENANCE AND REPAIRS

- The materials used in the repair of aerial devices and elevating work platforms will conform to standard specifications of strength, dimensions, and weights, and will be selected to safely support the rated workload
- Electrical wiring and equipment will meet National Fire Protection Association (NFPA) 70 provisions
- All exposed surfaces will be free from sharp edges, burrs, or hazardous projections



ELECTRICAL RATINGS

- The rating plate required will include a statement as to whether the aerial device is insulated or is non-insulated and, if insulated, the rated line voltage for which the aerial device was designed and tested
- The insulating portion of an aerial device will not be altered in any manner that might reduce its insulating value



SAFETY FACTORS & YIELD PTS

- The design of the basic structural elements of the aerial device including the platform and its component parts will have a yield point of not less than 3 times the rated load. Structural materials not having a clearly defined yield or break point will have a designed safety factor of not less than 5
- The designed safety factor of not less than 4 will apply to hydraulic and pneumatic parts which would, on failure, permit a free fall, free rotation of the boom, or loss of stability
- Noncritical components will have a bursting safety factor of not less than 2