



Aerial Work Platform Safety Program

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INTRODUCTION

Working above ground on aerial work platforms (AWP) supported by scissors, masts or booms can result in severe injury or death if safety methods are not followed. For example, the U.S. Bureau of Labor statistics reports that 75 percent of scissor lifts that tipped over resulted in fatalities.

PURPOSE

This document contains practices and procedures to protect employees from the hazards associated with using AWP's.

SCOPE

The provisions of this document apply to all personnel at Purdue University's West Lafayette campus, regional campuses, university research farms and agricultural centers, and related facilities and operations.

POLICY

It is the policy of Purdue University to take every reasonable precaution to provide a work environment free from recognized hazards for its employees in accordance with the General Duty Clause of the OSHA act (Public Law 91-596 Section 5(a)(1) and in accordance with specific OSHA standards. Purdue University's policy document is entitled Environmental Health and Safety Compliance.

The Director of the department of Radiological and Environmental Management (REM) is responsible for establishing and maintaining the Aerial Work Platform Safety Program.

Appropriate safety equipment (e.g. anchorages, lanyards) must be provided by the

University when such equipment is necessary to protect the health and safety of the employee(s). The supervising department is responsible for the purchase of such equipment.

ENFORCEMENT

Failure to follow the Purdue University Aerial Work Platform Program can result in life threatening or serious injury situations. Failure to follow the Aerial Work Platform Program will result in disciplinary action up to and including discharge.

APPLICABLE REGULATIONS AND STANDARDS

This AWP program references OSHA 1926.453 and the latest ANSI A92 standards:

- ANSI A92.2 – Vehicle-Mounted Elevating and Rotating Aerial Devices (Figure.1)
- ANSI A92.3 – Manually Propelled Elevating Aerial Platforms (Figure 2)
- ANSI A92.5 – Boom-Supported Elevating Work Platforms (Figure 3)
- ANSI A92.6 – Self-Propelled Elevating Work Platforms [Scissor Lifts] (Figure 4)

Aerial work platforms must be designed, constructed, and tested so as to be in compliance with the requirements of the applicable American National Standards Institute standards listed above.

Figure 1
Vehicle-Mounted Elevating Work Platform

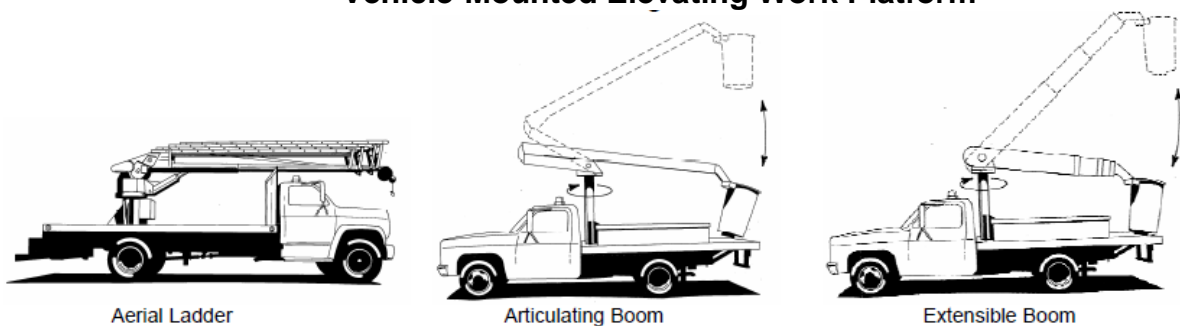


Figure 2
Manually Propelled Elevating Work Platform

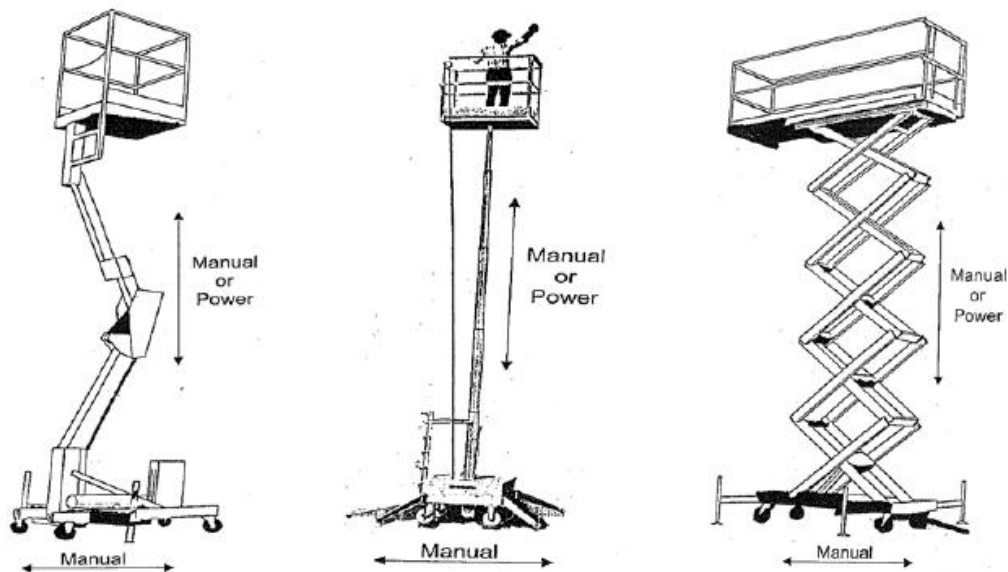


Figure 3
Boom-Supported Elevating Work Platform

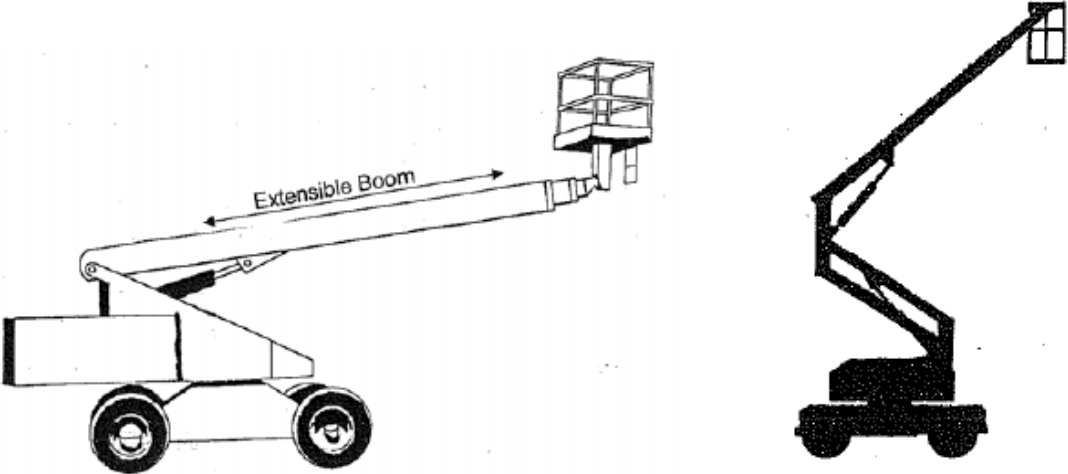
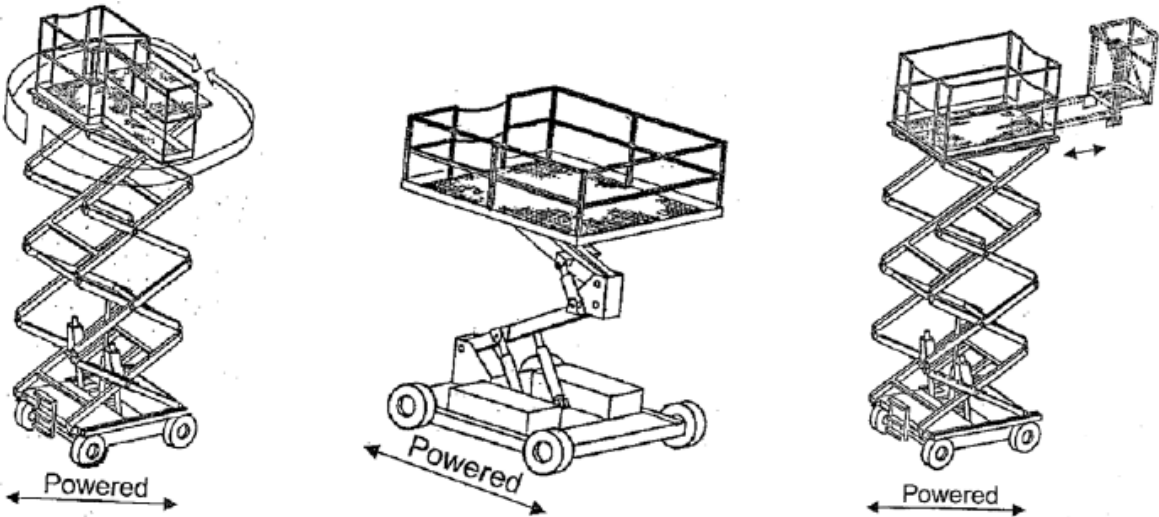


Figure 4
Self Propelled Elevating Work Platform



DEFINITIONS

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

“Aerial work platform (AWP)” is defined as a mobile or manually propelled device that has an adjustable position platform, supported from ground level by a structure.

“Articulating boom” means an aerial device that has 2 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.

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

“Exposed power line” means a power line that is not isolated or guarded.

“Extensible boom” means an aerial device, except for the aerial ladder-type, that has a telescopic boom.

“Insulated aerial device” means an aerial work platform that is designed with dielectric components to meet specific electrical insulating ratings.

“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.

“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.

“Power Line” means a distribution or transmission electrical line.

“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.

“Vehicle” means any carrier that is not manually propelled.

“Vehicle-mounted elevating and rotating work platform” means an aerial device or aerial work platform.

“Vertical tower” means an aerial device that is designed to operate vertically on a level surface.

EQUIPMENT SPECIFICATIONS

1. Aerial work platforms must not be field modified for uses other than those intended by the manufacturer, unless a modification has been certified in writing by the manufacturer or by any other equivalent entity.
2. Directional controls must:
 - Be of the type that will automatically return to the off or neutral position when released.
 - Be protected against inadvertent operation.
 - Be clearly marked as to their intended function.
 - An overriding control must be provided in the platform which must be continuously activated for platform directional controls to be operational and which automatically returns to the off position when released.
3. Aerial work platforms must be equipped with emergency controls at ground level.
4. Emergency ground level controls must be clearly marked as to their intended function and be capable of overriding the platform controls.
5. All of the following information must be clearly marked in a permanent manner on each aerial work platform:
 - Special workings, cautions, or restrictions necessary for operation.
 - Rated work load.
 - A clear statement of whether or not the aerial work platform is electrically insulated.
6. Rotating shafts, gears, and other moving parts that are exposed to contact must be guarded, as prescribed in general industry safety standard 29 CFR 1910 Subpart O.
7. Attachment points described in 29 CFR 1910.502 must be provided for fall protection devices for personnel who occupy the platform on aerial work platforms.

INSPECTION, MAINTENANCE, AND TESTING

1. Each aerial work platform must be inspected, maintained, repaired, and kept in proper working condition in accordance with the manufacturer's operating or maintenance and repair manual or manuals.
2. Before use visual equipment inspections must be performed before each shift and must include:
 - a. Cracked welds.
 - b. Bent or broken structural members.
 - c. Hydraulic or fuel leaks.
 - d. Damaged controls and cables.
 - e. Loose wires.

- f. Tire condition.
 - g. Fuel and hydraulic fluid levels.
 - h. Slippery conditions on the platform.
3. Any aerial work platform found not to be in a safe operating condition must be removed from service until repaired. All repairs must be made by an authorized person in accordance with the manufacturer's operating or maintenance and repair manual or manuals.
 4. Before and during use visual jobsite inspections must include:
 - a. Ditches.
 - b. Drop-offs.
 - c. Holes.
 - d. Bumps and floor obstructions.
 - e. Debris.
 - f. Overhead obstructions.
 - g. Power lines.
 5. Any unsafe conditions identified in the jobsite inspection must be corrected prior to the use of an AWP in the jobsite area.
 6. If the aerial work platform is rated and used as an insulated aerial device, the electrical insulating components must be tested for compliance with the rating of the aerial work platform in accordance with latest ANSI standard A92.2. Such testing must comply with all of the following provisions:
 - a. The test must be performed not less than annually.
 - b. Written, dated, and signed test reports must be retained by the department responsible for the insulated aerial device.
 - c. The insulated portion of an aerial device must not be altered in any manner that might reduce its insulating value.
 7. All danger, caution, and control markings and operational plates must be legible and not obscured.
 8. A copy of the operator's manual must be in a dry compartment on the AWP.

PERMITS AND TRAINING

1. Employees must be trained by a qualified person in the hazards associated with the use of aerial work platforms (AWP) before their use. This training must include safety guidelines for avoiding hazards above, below, and beside the AWP. Documentation of this training must be maintained. The training must include classroom and hands-on training.

2. This training as a minimum must include:

- Fall protection and job hazards analysis
- Unstable surfaces
- Live power proximity
- Tipping hazards and outriggers
- Falling objects and barricading
- Load capacity of the AWP
- Crushing and pinch-points
- Wind exposure limits
- Sloping surfaces
- Ground surface pot holes
- Operation of the AWP “under the direction of a qualified person”
- Controls operation
- Emergency descent/Rescue
- Operator’s manual
- Pre-operation inspection and record keeping
- Identification of malfunctions
- Purpose of placards and decals
- Operator warnings and instructions
- Function tests
- Evaluating the work site
- Hazards unique to the general type of AWP

It is expected that departments will provide detailed classroom and hands on training to their staff based on the general type of AWP that their staff will operate (i.e. vehicle-mounted elevating work platform, manually propelled elevating work platform, boom-supported elevating work platform, and self propelled elevating work platform). It is not expected that multiple detailed training sessions will need to be performed if an operator is to operate two different manufacturers’ models of a similar type of AWP. For example, an operator who is trained to operate self-propelled elevating work platforms does not need to attend a detailed training course on a JLG model, if they attended detailed classroom and hands on training on a Genie model. However, the trained operator is responsible for reviewing the model specific hazard information provided in the owner’s manual.

3. Upon successful completion of the classroom and hands on portions of the AWP training the participants will receive an AWP permit. Refresher training is required every three years.
4. Permits must:
 - a. Be carried by AWP operators when operating the equipment he or she has been trained to operate.
 - b. Be valid for a period not exceeding 3 years.
 - c. Indicate the type of AWP the operator is qualified to operate.

HAZARDS

Electrical Hazards

1. Workers in AWP’s that are not electrically insulated must not come within 10 feet of energized overhead power lines.

2. Only specially trained high voltage personnel, with approved PPE and in approved insulated AWP's, are authorized to work within 10 feet of energized overhead power lines.

Traffic and Vehicular Hazards

1. Before moving a vehicle supporting an aerial ladder for highway travel, employees must secure ladders in the lower position and must use the manually operated device at the base of the ladder, or other effective means to prevent elevation or rotation of the ladder.
2. Before moving a vehicle supporting an aerial lift for travel, employees must inspect the boom to ensure that it is properly cradled and the outriggers are in the stowed position.
3. When a vehicle-mounted elevating platform is elevated with employees in working position, the vehicle supporting an aerial device must not be moved.
4. Before and during travel, an operator must do all of the following:
 - a. Inspect to see that booms, platforms, aerial ladders, or towers are properly cradled or secured.
 - b. Ensure that outriggers are in a stored position.
 - c. Limit travel speed according to the following factors:
 - i. Condition of the surface.
 - ii. Congestion.
 - iii. Slope.
 - iv. Location of personnel.
 - v. Other hazards.
5. Operators of an aerial work platform over or adjacent to any public or private roadway must maintain adequate clearances of all portions of the aerial work platform to prevent being struck by vehicular traffic.

Fall Protection

1. A permitted operator must use a safety harness that has a lanyard which is in compliance with construction safety standard 1926.502(d) and which is affixed to attachment points provided and approved by the manufacturer. Any occupant of an aerial work platform described in figures 1 and 3 must use the harness. A fall arrest system must only be used where the aerial lift is designed to withstand the vertical and lateral loads caused by an arrested fall as specified by the manufacturer.
2. A permitted operator may use a body belt with a restraint device with the lanyard and the anchor arranged so that the employee is not exposed to any fall distance. An employee must use a restraint device where the aerial lift cannot withstand the vertical and lateral loads imposed by an arrested fall as specified by the manufacturer.
3. A permitted operator is prohibited from belting off to an adjacent pole, structure, or equipment while working from an aerial work platform.

4. A permitted operator must not 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 the employer. When employees exit to unguarded work areas, fall protection must be provided and used as required in construction safety standard 1926.502.
5. A means of notifying emergency personnel for the prompt rescue of employees in the event of a fall must be present on the jobsite. A means for promptly rescuing employees who have fallen must be determined before the work begins. This could include self-rescue if such means are provided.

OPERATING PROCEDURES

1. Only trained persons with a permit are allowed to operate an AWP.
2. Belting off to an adjacent pole, structure, or equipment while working from an AWP must not be permitted.
3. Employees must always stand firmly on the floor of the AWP, and must not sit or climb on the edge of AWP guardrails, or use planks, ladders or other devices for a work position.
4. A scissor lift with approved guardrails can be used without a personal fall arrest system.
5. The brakes must be set, and when outriggers are used, they must be positioned on pads or a solid surface.
6. The aerial work platform must be used only in accordance with the manufacturer's operating instructions and safety rules.
7. The designed rated capacity for a given angle of elevation must not be exceeded.
8. The manufacturer's rated load capacity must not be exceeded. The load and its distribution on the platform must be in accordance with the manufacturer's specifications. The aerial work platform rated load capacity must not be exceeded when loads are transferred to the platform at elevated heights.
9. Only employees, their tools, and necessary materials must be on or in the platform.
10. The guardrail system of the platform must not be used to support materials, other work platforms, or employees.
11. Employees must 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.

12. Fuel gas cylinders must not be carried on bucket platforms that would allow the accumulation of gases.
13. Only aerial work platforms that are equipped with manufacturer's installed platform controls for horizontal movement may be moved while in the elevated position.
14. Before and during driving, an operator of a platform must look in the direction of travel, keep a clear view of the path of travel, and make sure that the path is firm and level. A driver must avoid:
 - a. Pedestrians
 - b. Vehicles
 - c. Debris
 - d. Drop-offs
 - e. Holes
 - f. Depressions
 - g. Ramps
 - h. Overhead obstructions
 - i. Overhead electrical lines
 - j. Other hazards to safe elevated travel.
15. Outriggers or stabilizers, when provided, are to be used in accordance with the manufacturer's instruction. Brakes must be set and outriggers and stabilizers must be positioned on pads or a solid surface.
16. Aerial work platforms must be elevated only when on a firm and level surface or within the slope limits allowed by the manufacturer's instructions.
17. A vehicle-mounted aerial work platform (figure 1) must have its brakes set before elevating the platform.
18. A vehicle-mounted aerial work platform (figure 1) must have wheel chocks installed before using the unit on an incline.
19. Climbers must not be worn while performing work from an aerial work platform.
20. Platform gates must be closed while the platform is in an elevated position.
21. Altering, modifying, or disabling safety devices or interlocks is prohibited.
22. Care must be taken by the permitted operator to prevent ropes, cords, and hoses from becoming entangled in the aerial work platform.
23. A platform operator must ensure that the area surrounding the aerial work platform is clear of personnel and equipment before lowering the platform.
24. The aerial work platform must not be positioned against another object to steady the platform.
25. The aerial work platform must not be operated from a position on a truck, trailer, railway car, floating vessel, scaffold, or similar equipment.
26. The boom and platform of the aerial work platform must not be used to move or jack the wheels off the ground unless the machine is designed for that purpose by the

manufacturer.

27. If the platform or elevating assembly becomes caught, snagged, or otherwise prevented from normal motion by adjacent structures or other obstacles so that control reversal does not free the platform, all employees must exit from the platform before attempts are made to free the platform.
28. Stunt driving and horseplay are prohibited.
29. Weather conditions such as wind and lightning must be evaluated prior to raising the boom or platform. Manufacturer's recommendations for use in windy conditions must be followed.

ACKNOWLEDGEMENT

This program document is based largely upon the Michigan OSHA Aerial Work Platforms Standard