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Aerial and Scissor Lift Safety Program

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Introduction

Aerial/scissor lifts pose a serious safety hazard if not used properly. It is the policy of the University of North Carolina at Pembroke to train employees on the hazards of operating aerial lifts and to ensure such equipment is safety maintained.

Purpose

This program has been established to:

- Reduce risk by ensuring the safe operation of aerial lifts.
- Ensure departments understand and comply with safety standards related to aerial lifts.
- Ensure regulatory compliance and reduce liability.

Scope

This program applies to all employees and students operating aerial/scissor lifts on UNC Pembroke's campus.

Responsibilities

Management

- Ensure that responsibilities assigned within this program are carried out within their administrative departments.
- Designate employees responsible for the implementation of this program within their department.
- Actively support this program to demonstrate overall safety culture development.
- Ensure adequate funding is available to support this program.

Office of Environmental Health and Safety

- Assist departments with implementing a regulatory compliant aerial and scissor lift program.
- Assist with aerial/scissor lift training.
- Periodically review and update the aerial/scissor lift written program.
- Periodically evaluate the work site usage of aerial/scissor lifts.
- Investigate aerial and scissor lift usage injuries and damage.

Supervisors

- Review and ensure understanding of this program and its applicability to your department.
- Ensure employees comply with all provisions of this program.
- Ensure employees receive training appropriate to their assigned tasks and

maintain documentation.
- Ensure employees are provided with and use appropriate personal protective equipment (PPE).
- Take prompt action including disciplinary action when unsafe conditions or acts are observed.
- Investigate aerial and scissor lift usage injuries and damage. Ensure periodic maintenance is performed on the lift.

Aerial and scissor lift operator

- Adhere to owner's manual and all provisions in this program.
- Attend and adhere to all required training.
- Immediate report any unsafe acts or conditions to supervisor.
- Ensure worksite is barricaded.
- Complete worksite inspections and consult with supervisor and/or EH&S Office regarding any unusual hazards.

Definitions

Aerial Lifts: Any powered, mobile, vehicle-mounted device that may elevate, telescopically extend, articulate and may (or may not) rotate around a substantial axis in order to raise and support personnel to elevated job sites.

Aerial lifts include extendible boom platforms; vehicle-mounted aerial ladders; articulating, rotating boom platforms; vertical self-elevating towers; cherry pickers; bucket trucks and any other equipment built in accordance with either ANSI-A92.2 (1990), Vehicle-Mounted Elevating and Rotating Aerial Devices, or ANSI-A92.5 (1992), Boom Supported Elevating Work Platforms.

Scissor Lifts: Any powered, mobile device that has a personnel work platform which is mechanically raised vertically above the carriage by means of controls on the work platform.

This equipment is designed and fabricated according to either ANSI- A92.6 (1990), Self-Propelled Elevating Work Platforms, or ANSI-A92.3 (1990), Manually Propelled Elevating Aerial Platforms.

Anchorage: A secure point of attachment to be used with personal fall protection equipment.

Certified Operator: Certification of aerial/scissor lift operators at UNC Pembroke is a three- step process consisting of classroom instruction, hands-on training and hands-on evaluation. Once the employee has successfully completed all three steps they are considered to be a certified operator.

Competent Trainer: An employee who has successfully completed a Train–the–Trainer or equivalent type of training program and is familiar with the type of aerial/scissor lift in their work unit. A contractor or equipment vendor who has experience training aerial/scissor lift safety and operation and is familiar with the equipment is also permitted to be a Competent Trainer.

Competent Evaluator (Hands-on): An employee in the department who is experienced and competent with the aerial/scissor lift. An employee must be familiar with the equipment and its safe operation. In order to be considered competent in regards to conducting the evaluation portion of the aerial/scissor lift training, an employee must have successfully completed train-the-trainer course.

Familiarization: Providing information regarding the control functions and safety devices for the aerial /scissor lift to an operator of the equipment.

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

Outriggers: Devices that increase the stability of the aerial lift platform and that are capable of lifting and leveling the aerial / scissor lift platform.

Rated Work Load: The designated capacity of the aerial platform as specified by the manufacturer.

Stabilizers: Devices that increase the stability of the aerial lift platform but are not capable of lifting or leveling the aerial / scissor lift platform.

General Requirements

The following sections provide requirements and best management practices for the various types of aerial and scissor lifts used at UNC Pembroke. When in doubt, default to the manufacturer's instructions for the particular make and model of the lift for more detailed guidance.

The information in this document shall be supplemented by good judgment, safe operation, and caution in evaluating each situation. Since the operator is in direct control of the aerial/scissor lift, conformance with good safety practices is the responsibility of the operator. The operator shall make decisions on the use and operation of the aerial/scissor lift with due consideration for the fact that his or her own safety as well as the safety of others is dependent on their actions.

All operators **SHALL** be trained before operating aerial/scissor lifts. Operators are **ONLY** qualified to use lifts to the rated capacity of the equipment for which they are trained and evaluated. All operations shall be done safely and in accordance with accepted work practices and lift manufacturer guidelines. Various departments may impose additional restrictions on their operations as necessary.

Purchase Approval

Any aerial/scissor lift purchase must be approved by the Environmental, Health and Safety (EH&S) office (Appendix A). Please contact EH&S Office at 910-521-6792 or safety@uncp.edu for consultation and approval.

Pre-Use Inspection

- Every aerial/scissor lift must undergo a pre-use inspection prior to use on each shift. Aerial/scissor lifts not used during a shift do not have to undergo an inspection during that shift.
- Pre-use inspections must be documented using an appropriate checklist for the aerial/scissor lift similar to the one in Appendix B. Refer to the manufacturer's inspection requirements for complete inspection details.
- Completed checklists will be kept on file for one year.
- The pre-use inspection will identify conditions that could affect the safe use of the aerial/scissor lifts. If any unsafe conditions exist, the aerial/scissor lift shall be removed from service. In order to remove an aerial/scissor lift from service, the operator shall remove the keys and place an "Out of Service" tag near the operator control panel.
- Operators must immediately report any unsafe aerial/scissor lift conditions to their supervisor. When an aerial/scissor lift has been removed from service, the operator must give the keys to the supervisor for safekeeping. The supervisor is then responsible for ensuring the necessary arrangements are made for repair.
- Only authorized personnel shall perform aerial/scissor lift repairs and adjustments. All replacement parts shall be the same design as the original or an equivalent design as designated by the manufacturer.

Worksite Inspection

Operators will inspect the workplace to remove hazards before and during aerial lift use. The worksite will be inspected for hazards such as:

- Overhead obstructions and high voltage hazards.
- Slope(s), ditches, bumps, debris, drop-offs and floor obstructions.
- Wind and weather conditions.
- Other hazardous locations and atmospheres.
- Inadequate support (The working surface that the lift is sitting on cannot support the weight of the machine, men, etc. for the operation).
- Presence of unauthorized persons or other hazardous conditions.

The Office of EH&S, at the request of the operator's supervisor shall determine if there are any unusual hazards in areas where lifts will be used.

Personal Protective Equipment

Fall protection equipment must be used as follows when operating aerial/scissor

lifts:

1. Aerial Lifts:
    a. Operators shall be secured to the anchor point provided by the equipment manufacturer by either a self-retracting lanyard or by a lanyard short enough to prevent the employee from being ejected.
    b. Operators must follow manufacturer's recommendations as to which fall protection system to use.
2. Scissor Lifts:
    a. The guardrail system provides fall protection. If the manufacturer has installed an anchorage point, a fall protection system (restrain, positioning, personal fall arrest system) as designated by the manufacturer's instructions must be utilized.
3. Tying a lanyard off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.
4. Other types of personal protective equipment (PPE) such as hard hat, safety glasses, safety gloves, shall be worn according to the task specific PPE hazard assessment.

Training

1. Training must be completed prior to any use of the aerial/scissor lift. Certification of aerial/scissor lift operators at UNC Pembroke is a three-step process consisting of classroom instruction, hands-on training and hands-on evaluation.

2. Classroom instruction, hands-on training and hands-on evaluation can be conducted by either a competent trainer in the department, equipment manufacturer, safety professional and/or a vendor who specializes in aerial/scissor lift training.

3. To become a competent UNC Pembroke aerial/scissor lift trainer the employee must complete a train-the-trainer session. EH&S will provide training and will provide certification certificates.

4. Training must be specific to the type of aerial/scissor lift being used.

5. Training must cover the following:

    a. The purpose and use of the equipment manuals.
    b. That operating manuals are an integral part of the lift and must be properly stored on the vehicle.
    c. Pre-use inspection.
    d. Responsibilities associated with problems or malfunctions affecting the operation of the lift.
    e. Factors affecting stability.

f. The purpose of placards and decals.
g. Worksite inspection and barricades.
h. Applicable safety rules and regulations.
i. Authorization to operate.
j. Operator warnings and instructions.
k. Proper use of personal fall protection equipment.
l. Hands-on operation

6. Employees shall not be allowed to operate rented equipment unless they have been previously certified on similar equipment. Operators are also required to review the owner's manual and shall be given ample time to become familiar with the equipment and its controls before operation is permitted. The vendor is required to review equipment with the user when the user is not familiar with the type of aerial/scissor lift.

7. Trainees must successfully complete hands-on training and a hands-on evaluation before being allowed to operate an aerial/scissor lift independently. Trainees will be given adequate supervision and time to learn basic operating skills.

8. Initial operator hands-on evaluations must be completed using the checklist found in Appendix C or equivalent.

9. Documented re-evaluation of each aerial/scissor lift operator will be completed at least once every three years using Appendix C or equivalent.

10. Re-evaluations can be conducted by a train-the-trainer certified competent employee in the department who is experienced and competent with the aerial/scissor lift.

11. Refresher training in relevant topics will be provided to an aerial/scissor lift operator when any of the following occur:

a. The operator has been observed to be using the aerial/scissor lift in an unsafe manner.
b. The operator has been involved in an accident or a near-miss incident.
c. The operator has received an evaluation that reveals the operator is not using the aerial/scissor lift safely.
d. The operator is assigned to operate a different type of equipment.
e. A condition in the workplace changes in a manner that could affect safe operation of the equipment.

Maintenance

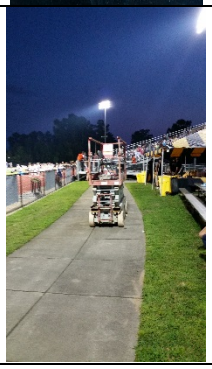
Periodic (depending on activity, severity of service and environment) maintenance evaluations shall be performed by the manufacturer or authorized representative. The items listed in the owners' manual shall be tested, evaluated and, if applicable, corrected by qualified personnel before the aerial/scissor lift is returned to service. Lifts shall not be operated if they are out of compliance with manufacturer specifications. Modifications or disabling of safety devices, such as warning beepers, guards or interlocks is prohibited.

Reference Documents

OSHA 29 CFR 1910.67 Vehicle-mounted elevating and rotating work platforms
OSHA 29 CFR 1926.452 Additional requirements applicable to specific types of scaffolds
OSHA 29 CFR 1926.453 Aerial lifts

Appendix A

Examples of Aerial / Scissor Lifts

	**Articulating Boom Platforms**: An aerial device with two or more hinged boom sections. They are designed to reach up and over obstacles.
	**Personal Aerial Man lift**: Portable aerial device that lifts vertically, but not horizontally. They are usually lightweight and designed for one person to use indoors.
	**Scissor Lifts:** An aerial device that lifts straight up and down, but not horizontally. They extend into the air via crisscross supports.
	**Extensible or telescoping boom lifts**: Are aerial devices with an extensible or telescopic boom. They are designed to reach vertically or horizontally
	**Vehicle mounted bucket lifts**: Are usually attached to a vehicle and used to repair utility lines.

Appendix B

PRE-USE AERIAL / SCISSOR LIFT INSPECTION FORM

Instructions: Follow the below guidelines to complete a hands-on lift inspection. Sign and date acknowledging you have completed the inspection. Deficiencies noted on the inspection form SHALL be corrected prior to operation. If the deficiencies cannot be corrected, the aerial lift SHALL not be used and lockout/tag-out procedures initiated.

Equipment Make/Model: _____Serial Number: _____Date completed:_____

Y	N	N/A	Check the following:	Comments	Initials
			Owner's manual legible and stored inside the container located on the platform.		
			All decals legible and in place.		
			Fluid levels checked. (Hydraulic oil, engine oil, coolant, etc.)		
			Structural and other critical components present and all associated fasteners and pins in place.		
			Battery packs in place, properly connected and not leaking.		
			Compartment covers in place.		
Y	N	N/A	**Check the following components or areas for damage, modifications, and improperly installed or missing parts:**	Comments	Initials
			Electrical components, wiring, and electrical cables		
			Hydraulic power unit, reservoir, hoses, fittings, cylinders, and manifolds		
			Drive and turntable motors and torque hubs		
			Boom wear pads, Gauges, Beacon, Lights		
			Tires, wheels, limit switches, warning alarms, horn, fasteners, damage to machine		
			(Function Test) Test all controls for proper operation		
			Fall Protection Devices (railing, gates, toe boards, anchor/connecting points, etc.)		
Y	N	N/A	**Equipment operation:**	Comments	Initials
			Obtained supervisor permission to use the aerial/scissor lift.		
			Barricade area with 4 cones and danger tape or other appropriate methods.		
			Wear appropriate PPE (hard hat, safety glasses, gloves, etc.)		
			Ensure you have a valid aerial lift card during lift operation.		

NOTE: This form must be kept on file for 1 year and is subject to review by the Environmental Health and Safety Office. Documentation of repairs shall be maintained with the aerial lifts preventive maintenance records.

Turn over to complete form

WORK AREA INSPECTION CHECKLIST FOR AERIAL / SCISSOR LIFT

Instructions: Before an aerial lift is used and during use, the operator shall check the area in which the aerial platform lift is to be used for possible hazards such as, but not limited to:

- Drop-offs or holes
- Slopes
- Bumps and floor obstructions
- Debris
- Overhead obstructions and high voltage conductors
- Hazardous locations and atmospheres
- Tools and/or other equipment
- Inadequate surface and support to withstand all load forces imposed by the aerial platform lift
- Wind and weather conditions
    - ✓ At 20mph wind speeds or anticipated gusts, lifts will be lowered to a maximum height of 20 ft
    - ✓ At 25mph wind speeds or anticipated gusts, lifts will be grounded
- Presence of unauthorized people
- Other possible unsafe conditions

Operator Print Name and Sign: _____

Additional Operators: _____
_____
_____
_____

NOTE: This form must be kept on file for 1 year and is subject to review by the Environmental Health and Safety Office.
Documentation of repairs shall be maintained with the aerial lifts preventive maintenance records

Appendix C

Aerial/Scissor Lift Hands-On Operator Training Evaluation Form

Trainee Name:	Work Unit:
Evaluator Name:	Department:
Equipment Manufacturer:	Date:
Model:	

NOTE: Hands-On Operator Training must be completed for each type of aerial lift utilized.

Step	Evaluation	N/A	Pass	Fail
1. Pre-use equipment inspection	Including but not limited to: safety devices, air/hydraulic/fuel system for leaks, cable/wiring harnesses for damage, loose/missing parts, tires and wheels, placards/warnings/and control markings, outriggers/stabilizers and other structures, guardrail system, other items as specified in owner's manual.			
2. Inspect Worksite	Including but not limited to: drop-offs or holes, slopes, bumps and floor obstructions, debris, overhead obstructions and electrical hazards, inadequate surface and support to withstand all load forces, wind and weather conditions, presence of bystanders, other unsafe conditions.			
3. Function test of lower control station.	Done to determine if there are any malfunctions.			
4. Utilize fall protection equipment	Face the machine. Maintain 3 point contact with ladder/hand rails (two hands, one foot OR two feet, one hand).			
5. Function test of bucket / platform / basket control station.	Done to determine if there are any malfunctions.			
6. Drive and creep / inch forward and reverse.	Move approximately 10 feet in a driving mode. Creep approximately 5 feet. Verify unit balance and stability.			

Step	Evaluation	N/A	Pass	Fail
7. Turn vehicle 360 degrees right and left.	Minimum disturbance of aerial lift platform. Verify unit balance and stability.			
8. Boom up & down, in & out.	Fully extend, fully raise. Minimum disturbance of aerial platform. Verify unit balance and stability.			
9. Rotate/swing boom 360 degrees in each direction.	Minimum disturbance of aerial platform. Verify unit balance and stability.			
10. Tilt platform in each direction.	Minimum disturbance of aerial platform. Verify unit balance and stability.			
11. Turn off machine using emergency stop function.	Locate and use emergency stop function.			
12. Park and shutdown aerial lift.	Minimum disturbance of aerial platform. Verify unit balance and stability.			
13. Dismount safely. Face the machine when dismounting.	Maintain 3 point contact with ladder/handrails (two hands, one foot OR two feet, one hand)			
14. Deploy/setup and store outriggers.	Follow manufacturer's guidance. Refer to owner's manual.			
15. Comments	*Must be included for all "Failed" tasks. If task is failed the evaluator must explain what was done incorrectly and have the trainee repeat the task until it is completed correctly.*			
Trainee Signature				
Evaluator Signature				

Appendix D

Safe Work Practices

General Safe Work Practices

- Operators shall not wear any loose clothing or any accessory that can catch in moving parts.
- Before machine is started, the operator must walk completely around the machine to ensure everyone and everything is clear of the machine.
- Articulating boom and extendable boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
- Modifications and additions that may affect the capacity or safe operation of an aerial/scissor lift are strictly prohibited without the manufacturer's written approval. Capacity, operation, and maintenance instruction markings will be changed as necessary if the manufacturer approves a modification.
    - EHS must be notified before modification takes place.
- The insulated portion (if applicable) of an aerial / scissor lift shall not be altered in any manner that might reduce its insulating value.
- Any signs, plates, or decals which are missing or illegible must be replaced.
- Welding operations on aerial/scissor lifts shall be conducted per UNCP Hot Work Permit Program.
- If the aerial / scissor lift becomes disabled, a "out of service" tag or equivalent shall be attached to the controls inside the platform in a conspicuous location.
- Aerial/scissor lift devices with noted, reported deficiencies shall not be operated until repairs are made and equipment is authorized for use.

Safe Work Practices *Before* Operation

- Consideration shall be given to the amount of wind. Follow the manufacturer's instruction regarding operation in windy conditions. As a general rule aerial/scissor lifts shall not be operated in winds exceeding 25 MPH although this can vary depending on the model of equipment.
- Guardrails must be installed and access gates or openings must be closed before raising the platform.
- Boom and platform load limits specified by the manufacturer shall not be exceeded.
- Before moving an aerial / scissor lift for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.
- Consideration shall be given to the protection of bystanders via barricading, having another employee keep bystanders at a safe distance or by other means.

- Aerial / scissor lifts shall not be operated from trucks, scaffolds, or similar equipment.

Safe Work Practices *During* Operation

- Attention shall be given towards the direction of travel, clearances above, below and on all sides.
- Employees shall not sit or climb on the guardrails of the aerial / scissor lift.
- Planks, ladders or other devices shall not be used on the work platform.
- An aerial / scissor lift shall not be moved when the boom is elevated in a working position with employees in the basket, except for equipment which is specifically designed for this type of operation.
- Aerial / scissor lift shall not be placed against another object to steady the elevated platform.
- Aerial / scissor lift shall not be used as a crane or other lifting device.
- Aerial / scissor lift devices shall not be operated on grades, side slopes or ramps that exceed the manufacturer's recommendations.
- The brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface.
- Speed of aerial/scissor lift devices shall be limited according to the conditions of the ground surface, congestion, visibility, slope, location of personnel and other factors that may cause hazards to other nearby personnel.
- Stunt driving and horseplay shall not be permitted.
- Booms and elevated platform devices shall not be positioned in an attempt to jack the wheels off the ground.
- The area surrounding the elevated platform shall be cleared of personnel and equipment prior to lowering the elevated platform.
- On boom-type machines, drive controls shall not be used to maneuver in close to an obstacle. The swing and boom functions shall be used for maneuvering.
- Operators are to call for assistance if the platform or any part of the machine becomes entangled.
- The operator shall maintain a clear view of the path of travel and a safe distance from other obstacles such as: debris, drop offs, holes, depressions, slopes, and overhead hazards. The following approach distances to energized electrical lines must be maintained:

Voltage Range (Phase to Phase)	Minimum Safe Approach Distance (feet)
0 to 300V	Avoid Contact
300V to 50 KV	10
>50KV to 200KV	15
>200KV to 350KV	20
>350KV to 500KV	25
>500KV to 750KV	35
>750KV to 1000KV	45

Safe Work Practices *After* Operation

- Safe shutdown shall be achieved by utilizing a suitable parking area, placing the platform in the stowed position, placing controls in neutral, idling engine for gradual cooling, turning off electrical power, and taking the necessary steps to prevent unauthorized use.
- Aerial / scissor lifts shall be shut off prior to fueling. Fueling must be completed in well ventilated areas free of flames, sparks or other hazards which may cause fires or explosions.