



INDIANA UNIVERSITY

OFFICE OF THE EXECUTIVE VICE PRESIDENT
FOR UNIVERSITY ACADEMIC AFFAIRS
University Environmental Health and Safety

Aerial Lift Program

October 14, 2015

1. INTRODUCTION

1.1. Purpose

Indiana University Environmental Health and Safety (IUEHS) developed this Program to establish guidelines for the maintenance, safe operation and use of aerial lifts by Indiana University employees. The Program requires training for those and authorized in aerial lift operation to assure that operators have a basic understanding of related hazards and safe operation of the specific equipment used by employees. This Program is intended to comply with the OSHA standard contained in [29 CFR 1910.67](#) which applies to Vehicle-Mounted elevating and rotating work platforms.

1.2. Scope

This Program applies to the all Indiana University Departments that set-up, maintain and/or operate an aerial lift. Aerial lifts include all powered or manually operated personnel lifting devices being operated by Indiana University personnel regardless of location. The Aerial Lift Program applies to the following lift types:

- 1.2.1. **Telescoping:** ex. scissor lifts and vertical man lifts. The personnel basket or platform only goes up and down. There are no hinged sections in the boom. This type is generally used indoors.
- 1.2.2. **Articulating:** ex. construction-type lifts. The personnel basket or platform can be maneuvered up, down, over, and sideways. There are one or more hinged boom sections. This type is generally used outdoors.
- 1.2.3. **Boom Trucks:** The personnel basket or platform is located on a vehicle. There may or may not be hinged boom sections. This type is used outdoors for painting or overhead power line access. The boom may or may not be insulated for electrical hazards.

2. AUTHORITY AND RESPONSIBILITY

2.1. University Environmental Health and Safety (IUEHS) shall be responsible for:

- 2.1.1. Developing the written Aerial Lift Program and revising the Program as necessary;
- 2.1.2. Conducting, or authorizing others to conduct, required training for all Indiana University owned lifts to ensure proper compliance ; and
- 2.1.3. Maintaining documentation of the training.

2.2. Departments shall be responsible for:

- 2.2.1. Ensuring employees using an aerial lift have been properly trained before operating any lift;
- 2.2.2. Ensuring employees using equipment not owned by Indiana University but used by IU employees are properly trained by the vendor;
- 2.2.3. Contacting IUEHS for assistance when purchasing an aerial lift;
- 2.2.4. Ensuring that no modifications or additions are made to an aerial lift without the manufacturer's written approval;
- 2.2.5. Maintaining aerial lifts that are operated in their department per manufacturer recommendations;
- 2.2.6. Ensuring that aerial lifts that do not pass the required inspection are tagged "out of service" and not used until all necessary repairs have been made;
- 2.2.7. Ensuring annual inspections are conducted by a qualified service technician;

- 2.2.8. Retaining copies of inspection and maintenance records for each lift for a period of four years;
- 2.2.9. Allowing employees working on a lift to make their own decision to come down from the lift in any situation where they feel their safety is threatened;
- 2.2.10. Disciplining employees who do not operate aerial lifts in a safe manner; and
- 2.2.11. Immediately correcting deficiencies found with an aerial lift.

2.3. Employees shall be responsible for:

- 2.3.1. Reviewing and complying with the Aerial Lift Program;
- 2.3.2. Attending aerial lift training;
- 2.3.3. Conducting pre-use inspection prior to operating the lift and ensuring that it is safe to operate;
- 2.3.4. Reviewing the operating instructions and safety guidelines for the lift they are using;
- 2.3.5. Notifying the supervisor of any deficiencies noted when conducting the inspection; and
- 2.3.6. Refraining from using an aerial lift that has not completely passed the required inspection or job site inspection.

3. PROGRAM ELEMENTS

3.1. Operating Requirements

- 3.1.1. Only trained and authorized operators shall be permitted to operate an aerial lift;
- 3.1.2. Modifications and additions that affect capacity and the safe operation of the aerial lift shall not be performed by any employees without the manufacturer's prior written approval. Capacity, operation and maintenance manuals, instruction plates, tags, or decals shall be modified accordingly. Modifications shall also conform with all applicable provisions of ANSI A92.2-1969 for Vehicle-Mounted Elevating and Rotating Platforms and OSHA 1910.68;
- 3.1.3. The operator's manual must be available to the operator on the lift itself. Operators must review the operating instructions and safety guidelines for familiarization of the lift; and
- 3.1.4. Servicing and maintenance shall be done in accordance with the manufacturer's recommendations and by a qualified service technician.

3.2. Inspections

Prior to operating an aerial lift, the employee shall perform a pre-operation safety inspection as follows using the appropriate Aerial Lift Inspection Checklist in Appendix B.

- 3.2.1. The inspection must be made daily or when the aerial lift is used;
- 3.2.2. When aerial lifts are used on a round-the-clock basis, they shall be inspected before each shift;
- 3.2.3. The inspection shall identify conditions that affect or could affect the safe operation of the aerial lift;
- 3.2.4. If any unsafe condition(s) exists, the lift shall be removed from service and tagged "out of service" until proper repairs or concerns are addressed;
- 3.2.5. If an operator discovers any operational or safety concern, immediately notify the supervisor so they can notify the person responsible for the repairs; and
- 3.2.6. Repairs shall only be made by a qualified service technician.
- 3.2.7. **Work Area Inspection**
 - 3.2.7.1 Prior to operating an aerial lift, the work area shall be inspected to ensure that conditions are safe enough to operate the lift. The inspection can be completed by utilizing the Job Site Inspection Checklist (part of the Aerial Lift Inspection Checklist) in Appendix B.
 - 3.2.7.2 Operators must ensure that pedestrian traffic has been diverted appropriately.
- 3.2.8. **Aerial Lift Inspection**
 - 3.2.8.1. Prior to operating an aerial lift, the operator must perform an inspection of the lift utilizing the Aerial Lift Inspection Checklist in Appendix B.
 - 3.2.8.2. Completed forms shall be kept with the lift.

3.2.9. **Battery Inspection**

3.2.9.1. Protective acid resistant gloves, goggles and long sleeves shall be worn when checking the battery fluid levels and/or replacing battery electrolyte. Batteries shall be inspected for:

- 3.2.9.1.1. Proper electrolyte fluid levels;
- 3.2.9.1.2. Cracks and holes;
- 3.2.9.1.3. Unsecured or leading cells;
- 3.2.9.1.4. Frayed electrical cables;
- 3.2.9.1.5. Broken or cracked insulation material;
- 3.2.9.1.6. Ensuring all connections are tight; and
- 3.2.9.1.7. Confirming that the vent cap is not clogged.

3.2.10. **Personal Fall Protection Equipment Inspection**

3.2.10.1. Personal fall protection equipment shall be inspected prior to each use.

3.2.10.2. The inspection shall consist of a visual inspection checking for mildew, wear, damage or other deterioration.

3.2.10.3. Defective equipment shall be taken out of service if it will not provide adequate protection. Report defective equipment to the operator's supervisor.

3.3. **Traveling**

3.3.1 Lifts are not designed to be moved to another location while the platform or basket is raised. Always lower the platform and, if necessary, exit the lift prior to moving.

3.3.1.1. If the lift is designed to be driven by the operator to the next work location, it shall be done so with the platform is as low to the ground as possible (2-3 feet).

3.3.2 Before traveling on open roadways, operators must secure the booms and buckets to the lowered travel position by the locking devices provided. Locking pins must be in place as directed by the manufacturer.

3.3.2.1 If the lift is designed to be driven to the next work location while the operator is still in the bucket or boom, it shall be done so with the platform lowered to the travel position.

3.4. **Fall Protection Requirements**

Employees working in an aerial lift must adhere to all manufacturer's recommendations and this Program to ensure safe operation and use.

3.4.1. Employees are prohibited from extending their upper body outside of the basket or over any of the guardrails present on the lift they are using.

3.4.2. Employees shall ensure that the lift platform chains are connected or doors are closed before operating the lift.

3.4.3. Employees working in a bucket truck or boom lift are required to wear a full body harness and a lanyard connected to an appropriate attachment point on the bucket or boom.

3.4.4. Employees working in a scissor lift or vertical man lift that are equipped with anchor points are required to wear fall protection equipment. If guardrails are not present on the scissor lift or vertical man lift, then employees are required to wear fall protection equipment.

3.4.5. Employees wearing fall protection equipment are required to follow the procedures identified in the IU Fall Protection Program;

3.5. **Outriggers**

Outriggers are used as a stabilizing tool for the lift. Setting up the outriggers is extremely important and shall be done correctly. Incorrect use of outriggers could cause the aerial lift to tip over.

3.5.1. When possible, position outriggers on solid surfaces such as concrete or asphalt;

3.5.2. Position outriggers on level ground;

3.5.3. Always use cribbing plates or outrigger pads when positioning outriggers on soil;

3.5.3.1. Check the soil density to ensure that the surface is stable and not recently backfilled;

3.5.4. Always bring the outriggers straight down, never at an angle;

3.5.5. Never stand behind the outrigger or between an outrigger and another fixed object when it is being lowered or retracted.

3.5.6. Prior to operating the lift, the operator shall ensure that the brakes are set.

3.5.6.1. The brakes must be set anytime outriggers are used.

3.5.6.2. Wheel chocks must be installed before the lift is used when working on an incline.

3.6. Working Surfaces

- 3.6.1. Employees shall always stand firmly on the floor of the basket or boom, and shall not sit, stand or climb on the edge of the basket or guardrails present.
- 3.6.2. Employees shall never attempt to climb outside of the basket or over extend their upper body beyond the railing of the basket.
- 3.6.3. Aerial lifts may not be used in combination with other devices such as ladders, planks or scaffolding.

3.7. Electrical Hazards

- 3.7.1. Aerial lifts shall not be operated within 10 feet of overhead power lines unless the operator is a qualified electrician and has completed the necessary electrical safety training, has proper knowledge, protective equipment and tools necessary to work on the equipment safely. The 10-foot clearance applies to any part of the lift, the operator, tools, materials and equipment in use.
- 3.7.2. When qualified electricians are operating within the 10-foot clearance area, personnel on the ground must not be in contact with any part of the aerial lift.

3.8. Adverse Weather Conditions

- 3.8.1. Aerial lifts operated outdoors shall not be used in adverse weather conditions, such as approaching thunderstorms, high or gusty winds, or the presence of lightning. Outdoor use of lifts in winds exceeding 20 miles per hour is prohibited unless prior approval is obtained from IUEHS.
- 3.8.2. If employees are working on an aerial lift outside when adverse weather conditions start, they must stop all work activities, lower the lift to ground level and exit the lift to find refuge in a safe environment.

3.9. Mechanical Failures

- 3.9.1. All aerial lifts shall have auxiliary (ground) controls so the platform or basket can be safely lowered to the ground in the event that the operator platform controls fail or the operator can not operate the basket controls.
- 3.9.2. Operators shall never attempt to climb out of the basket or climb down the boom in the event of mechanical failure.
- 3.9.3. Ground controls can be used by another authorized operator if the stranded operator grants permission. Permission is implied if the operator is unconscious.

3.10. Load Limits

- 3.10.1. Operators must be familiar with the maximum capacity of their lift.
- 3.10.2. The load limit shall be indicated on the lift and posted in a visible location.
- 3.10.3. Load limits for the boom or basket lift shall not be exceeded. The load limit total includes the weight of the operator and any equipment or tools that may be present in the boom or basket.
- 3.10.4. The load limits must be specified by the manufacturer.
- 3.10.5. There shall only be as many people in the lift basket as the lift was designed for.

3.11. Tip-Over

- 3.11.1. Tip-over can occur when aerial lifts are operated on soft or uneven ground, if the rated load limit is exceeded or if the lift is struck by a large object or vehicle. To avoid a tip-over:
 - 3.11.1.1. Do not exceed the manufacturer's rated load capacity limits;
 - 3.11.1.2. Avoid unnecessary travel with the lift in an elevated position;
 - 3.11.1.3. Establish a work area perimeter;
 - 3.11.1.4. Do not drive near leading edges or holes;
 - 3.11.1.5. Do not raise the platform on a slope or drive onto a slope when elevated;
 - 3.11.1.6. Do not drive on uneven or soft surfaces when elevated;
 - 3.11.1.7. Do not exceed the vertical and horizontal reach limits of the lift;
 - 3.11.1.8. Do not use the lift in windy conditions exceeding 20 miles per hour; and

3.11.1.9. Avoid excessive horizontal forces when working from an elevated lift.

3.12. Pedestrian Traffic

- 3.12.1. Operators must be constantly aware of their surroundings.
- 3.12.2. Operators are responsible for the safety of pedestrians that may be in the vicinity of the lift equipment.
- 3.12.3. When lift work is performed in the vicinity of pedestrian traffic, operators must take special precaution to ensure that the work is isolated from the pedestrian traffic.

3.13. Signs, Caution Tape and Barriers

- 3.13.1. The aerial lift boom and basket shall never be positioned above pedestrians or other workers.
- 3.13.2. If an aerial lift is going to be used in an area near pedestrian traffic, operators are required to isolate the work area by establishing a perimeter and safely diverting the pedestrian traffic.
 - 3.13.2.1. Danger signs, caution tape and/or barriers shall be used to create the perimeter of the work area. The perimeter must be delineated in a way so that the boom and basket remain in the work area during all work positions. If the work area is limited, operators may only position the boom as far as the established perimeter.

3.14. Safety

- 3.14.1. Employees working on a lift are allowed to make their own decision to come down from the lift in any situation where they feel their safety is threatened.
- 3.14.2. If environmental conditions such as weather and wind speed are unsafe, employees working on a lift shall come down from the lift and stop work until safety conditions are present.
 - 3.14.2.1. If the wind speed is 20 mph or higher, the environmental condition is considered unsafe.
 - 3.14.2.2. If threatening weather such as storm watch/warning or tornado watch/warning are in effect, the environmental condition is considered unsafe.

4. TRAINING AND RECORDKEEPING

4.1. General Requirements

- 4.1.1. All aerial lift operators are required to successfully complete the classroom aerial lift operator training program along with hands-on training prior to operating any aerial lift.
- 4.1.2. All operators must be retrained every three years through successful completion of the hands-on training.
- 4.1.3. If operators cannot demonstrate proficiency or are involved in an Incident using the lift, all training must be repeated.

4.2. Classroom Training

- 4.2.1. The classroom training shall consist of:
 - 4.2.1.1. Responsibility;
 - 4.2.1.2. Pre-operation inspection;
 - 4.2.1.3. Function tests; and
 - 4.2.1.4. Safe operation.

4.3. Hands-on Training

- 4.3.1. The hands-on training shall consist of:
 - 4.3.1.1. Location of the operators manual inside the storage box on the lift;
 - 4.3.1.2. Understanding the information in regards the pre-operation inspection;
 - 4.3.1.3. Understanding all control functions, decals and warning;
 - 4.3.1.4. How to operate the lift correctly. The user must show that they know how to use the lift properly and safely; and
 - 4.3.1.5. Awareness and understanding of all safety devices specific to the aerial lift they will be using.

4.4. Recordkeeping

- 4.4.1. Inspection forms shall be retained by the department for a period of four years.

5. REFERENCENCES

- ANSI A92.2-1969
- OSHA [29 CFR 1910.67](#)
- Indiana University Fall Protection Program

6. REVISIONS

New Document: October 14, 2015

APPENDIX A - GLOSSARY

Aerial Device – Any vehicle-mounted device, telescoping, or articulating, or both, which is used to position personnel.

Articulating Boom Platform – An aerial device with two or more hinged boom sections.

Insulated Aerial Device – An aerial device designed for work on energized lines and apparatus.

Fall Protection – Means used to protect workers from falls from heights.

Platform – Any personnel-carrying device (basket or bucket) which is a component of an aerial device.

Qualified service technician – A service technician that is trained and qualified to perform maintenance on the machine in accordance to the procedures found in the maintenance manual.

APPENDIX B – AERIAL LIFT INSPECTION CHECKLIST

| Aerial Lift Inspection Checklist | | | | | |
|--|----|----------------|--|----|----------------|
| Operator's Name: | | | Date of Inspection: | | |
| Pre-use Inspection | OK | Repairs Needed | Job Site Inspection | OK | N/A |
| Ensure that operator's manual is on the lift | | | Check ground condition – uneven, holes, soft soil | | |
| Check lift for visible damage | | | Check slope | | |
| Check for hydraulic leaks | | | Look for overhead obstructions | | |
| Inspect belts and hoses | | | Observe environmental conditions- windy or unsafe weather (wind shall not exceed 20 mph) | | |
| Inspect pins, banjo bolts and connections | | | Check surroundings for hazardous areas | | |
| Inspect tires | | | Look for pedestrian or vehicular traffic | | |
| Inspect limit switches | | | When necessary, define the work zone with barriers and restrict access | | |
| Inspect platform and guardrails | | | Walk the path of travel the lift is going to move on | | |
| Read the placard and decals and ensure that they are present and legible | | | Electrical hazards present | | |
| Verify platform load is within the rated capacity | | | | | |
| Inspect the lift pothole mechanism | | | | | |
| Function Test | OK | Repairs Needed | Vehicle Components | OK | Repairs Needed |
| Position machine on a firm surface | | | Oil Level | | |
| Deploy or position the outriggers | | | Fuel Level / Battery Charge | | |
| Check the interlock display light and confirm they are all on | | | Coolant Level (Do not check while engine is hot) | | |
| Confirm the machine is level by using the bubble level | | | Tire Pressure / Condition | | |
| Push the e-stop button to the off position | | | Horn | | |
| Use the drive function control – It shall not function | | | Gauges | | |
| Use the lift function control – It shall not function | | | Brakes | | |
| Pull the e-stop button to the on position | | | Lights | | |
| Test the tilt alarm | | | Steering | | |
| Check the drive function: forward and reverse | | | Back-up alarm | | |
| Check the lift function: up and down | | | Warning lights | | |
| | | | Battery fluid level | | |

