Aerial Lift and Scaffolding Guidelines

November 2018
Aerial Lift and Scaffolding Guidelines

TABLE of CONTENTS

I. General
II. Roles and Responsibilities
III. Types of Aerial Lifts
IV. Operating Requirements for Aerial Lifts
V. Inspections
VI. Operating Requirements for Scaffolding
VII. Training and Record Keeping

Appendices

A. Aerial Lift Vehicle Inspection Report
B. Aerial Lift Pre-Use Inspection Checklist Form
C. Manlift Inspection Certification Record
D. UNC Campus Locations of Aerial Lifts
I. General

Aerial lifts and scaffolding are commonly used in construction, maintenance, inspection and repair services to lift University employees to an elevated work position. Proper operation and use of aerial lifts and scaffolding can make completion of tasks at elevation safer and more efficient. However, unsafe use, operation and lift work practices can result in serious injury. This guideline outlines general, operating, maintenance, inspection and training requirements governing safe aerial lift and scaffolding use at the University of Northern Colorado.

II. Roles and Responsibilities

In order for these guidelines to be effective, employees working on subject equipment shall understand and take an active role in meeting these responsibilities and guidelines. Due to the potential hazards associated with various types of work activities, the specific responsibilities outlined below shall be followed.

A. Managers and Supervisors

The following are the responsibilities of the managers and supervisors under the aerial lift and scaffolding guidelines:

- Understand hazards specific to aerial lifts and scaffolding.
- Ensure modifications are not made to aerial lifts without manufacturer’s prior approval.
- Ensure signs, caution tape, barriers/fences and other means of diverting pedestrian traffic are in place prior to scaffolding or aerial lift use.
- Ensure that employees attend and complete all required training.
- Must retain completed lift inspections reports for a minimum of three years.
B. Environmental Health & Safety

The following are the responsibilities of the Environmental Health & Safety Department:

- Evaluate and update the written Aerial Lift and Scaffolding Guidelines.
- Provide training as requested, for supervisors and employees.
- Collect and maintain completed inspection forms.

C. Operator

The following are the responsibilities of the operator under the aerial lift and scaffolding guidelines:

- Understand hazards specific to aerial lifts and scaffolding.
- Ensure modifications are not made to the equipment without the manufacturer's prior approval.
- Perform lift inspections prior to each use (See Appendices A, B and C) and submit the completed form to the appropriate party as indicated on the form.
- Immediately report damage or irregularities of lift or scaffolding operations to their supervisor.
- Immediately report worn or damaged personal fall arrest system components to the supervisor.
- Attend and complete required training.

III. Types of Aerial Lifts

There are multiple types of aerial lift equipment. Below are some different types of lifts and special hazards for each lift:

A. Bucket Truck

Bucket trucks and cherry pickers are types of aerial lifts that contain a bucket-like platform attached to a long arm (boom). As the arm unfolds, the platform rises. Special Hazards: Insulating integrity, fall from above, tip over, collision, electrocution.

B. Scissor Lifts

Scissor lifts use cris-crossed braces that extend and stretch upward. Special Hazards: Collision, fall from above, tip over, electrocution.

C. Articulated Boom Lift

Articulating boom lifts are able to extend up and over machinery and other obstacles and are able to reach elevated positions not easily approached by a straight boom lift.
Special Hazards: Insulating integrity, fall from above, tip over, collision, electrocution

D. Telescoping Boom Lift

Telescoping boom lifts are used for applications that require high reach capability. Special Hazards: Insulating integrity, fall from above, tip over, collision, electrocution

E. Man Lift

Manlifts consist of platforms or brackets and accompanying handholds mounted on, or attached to an endless belt, operating vertically in one direction only and being supported by, and driven through pulleys, at the top and bottom. These manlifts are intended for conveyance of persons only. This section applies to manlifts used to carry only personal trained and authorized by the employer in use.

Special Hazards: Insulating integrity, fall from above, tip over, electrocution

IV. Operating Requirements for Aerial Lifts

Aerial lifts must be cared for according to manufacturer's requirements. Aerial lifts must be operated and used in accordance with OSHA and American National Standard Institute (ANSI) standards.

A. Street Travel

Before traveling on open roadways, operators must make appropriate arrangements. Prior to travel, aerial ladders, booms and towers must be secured in the lower traveling positions by the locking devices provided or by other equally effective means. Locking pins must be in place as directed by the manufacturer.

B. Vehicle Positioning

Prior to performing a lift, the vehicle in which the lift is mounted needs to be positioned in such a way as to allow the boom and basket a full range of motion inside the work area. With some types of lifts, once the vehicle is in the desired position, special stabilizing tools (such as outriggers and wheel chocks) need to be installed in order to safely operate the lift. Other types of lifts allow vehicle movement while the boom is extended and do not require stabilizing equipment. Unless the vehicle is designed to do so an aerial lift vehicle should never be moved when the boom is elevated.

C. Load Limits

- Load limits for the boom and basket shall not be exceeded.
- Load limits for boom and basket must be posted in a visible location on the aerial lift.
• Boom and basket load limits must be specified by the manufacturer or by any other equivalent entity.

D. Wind and Gusty Conditions

Each aerial lift will have manufacturer recommendations (either posted on the lift or in the operation manual) showing the maximum wind / gust speeds for operating the lift. (Excluding a boom truck, most aerial lifts cannot be lifted with wind or gusts exceeding 20 to 25 mph.)

E. Fall Protection

A fall arrest system is required if any risk exists that a worker may fall from an elevated position. As a general rule, the fall arrest system should be used anytime a working height of six feet or greater is reached. Working height is the distance from the walking/working surface to a lower level. Operators in a lift are required to wear a personal fall arrest system consisting of a full body harness and a lanyard properly attached. An appropriate lanyard, one that is no longer than six (6) feet.

The following information applies to the mandatory fall protection requirements for operators and employees working in an aerial lift (bucket truck, boom lift, or scissor lift).

• Operators shall remain tied-off until the work is finished and the lift has been safely lowered to the ground.
• Operators working from an aerial lift may only tie off to the basket or boom of the aerial lift (see manufacturer’s recommendations). Tying off to an adjacent pole, structure or other equipment is prohibited.
• Operators must receive training on the proper use of fall protection equipment.
• Fall arrest system shall be rigged such that an operator cannot free fall more than six feet or contact a lower level.
• Operators are prohibited from extending their upper body outside of the basket. Personal fall protection equipment or components shall be used only for appropriate fall protection.
• Operators must also ensure that their weight and the weight of any equipment and tools they are using do not exceed the load limit of the aerial lift.
• Personal fall arrest systems or components subjected to impact loading shall be immediately removed from service and shall not be used again.
• Personal fall arrest systems shall be inspected prior to each use for mildew, wear, damage, or other deterioration. Defective components shall be removed from service.
**Exemption:** Manlifts that have a metal frame completely around the working platform consisting of a 42" inch top bracing bar, middle bar that traverses up and down to allow individuals to get into the platform and a 3-4" inch toe board) do not require the use of fall protection. Those which do not meet this criteria, at a minimum a fall arrest system consisting of a personal body harness and (6) six foot lanyard will be worn while working with the lift.

Additional personal protective equipment may be required for the work being performed including but not limited to:
- Hard Hats
- Safety Glasses
- Gloves
- Protective clothing

**F. Working Surfaces**

- Operators shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket.
- Operators shall never attempt to climb outside of the basket or over extend the upper body beyond the railing of the basket.
- Operators may only perform work in areas which can be reached from inside the basket of the lifting device.
- Aerial lifts may not be used in combination with other devices such as ladders, planks or scaffolding.

**G. Wheel Chocks**

Wheel chocks provide additional protection against accidental vehicle movement. Chocks prevent accidental movement or slippage of vehicles by bracing the wheel on both sides. This is important during boom and basket movement when shifting weight can affect wheel placement. Chocks must be utilized before operating an aerial lift that is positioned on an incline.

**H. Brakes**

Brakes provide protection against accidental movement. Prior to operating the lift, the operator shall ensure that the brakes are set.
I. Outriggers

Outriggers are a type of stabilizing tool. If outriggers are used they should be positioned on “cribbing” pads or a solid surface.

When setting outriggers the following should be followed:

- When possible, position outriggers on a solid surface such as concrete or asphalt. Position outriggers on level ground.
- Always bring outriggers straight down, never at an angle.
- Never stand behind an outrigger or between an outrigger and another object when it is being retracted. (The center of gravity might have shifted during lifting activities and the sudden release of the outrigger could cause the vehicle to lunge.)
- If the outriggers are positioned on soil, ensure that the surface is stable and not recently backfilled.

J. Power Lines

Only aerial lifts with insulated buckets may be used for work on overhead power lines. Lifts that are not insulated must maintain at least a 15 foot distance between the boom and any energized electrical lines or source. Always treat power lines, wires, and other conductors as being energized even if they are inactive or appear to be insulated. Operators that are not electrical workers must remain at least 15 feet from power lines.

K. Pedestrian Traffic

Operators must be constantly aware of their surroundings. Aerial lift operators are responsible for the safety of people in the vicinity of the lifting equipment. In the event that aerial lift work needs to be conducted in the vicinity of pedestrian traffic, operators must take special precautions to ensure that the work is isolated from pedestrian traffic.

L. Signs, Tape, and Barriers

An aerial lift boom or basket should never be positioned above pedestrians or other workers. 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. Signs, caution tape and barriers should be used to create the perimeter of the work area. Next to buildings, additional signs may be needed at all entrances and around the perimeter of the work area. Proper barriers (traffic cones, etc.) shall be used when using an aerial lift vehicle, in a vehicle traffic area (street, etc.).
M. Dangerous Obstacles

Operators should never position themselves between overhead hazards; such as joists and beams, or the rails of the basket. Accidental movement of the lift could result in a crushing hazard. Operators should always be aware of other obstacles. Operators must keep a minimum distance of 15 feet from all dangerous obstacles. Dangerous obstacles may include:

- Tools and equipment
- Other aerial lifts
- Other vehicles
- Trenches and pits
- Mechanical devices
- Pot holes
- Cranes
- Power lines

N. Tip-Overs

Tip-overs 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 another vehicle. To help avoid a tip-over the following are recommended:

- Do not exceed the manufacturer’s rated load capacity limits
- Avoid unnecessary travel with lift in the elevated position
- Establish a work area perimeter
- Do not drive near leading edges or holes
- Do not raise the platform on a slope or drive onto a slope when elevated
- Do not drive onto uneven or soft surfaces when elevated
- Complete the inspection form
- Do not use the platform in windy conditions
- Avoid excessive horizontal forces when working from an elevated scissor lift

V. Inspections

Prior to operating an aerial lift, the work area shall be inspected to ensure that conditions are safe to operate the aerial lift. Operators must ensure that they are operating in accordance to the Operating Requirements for Aerial Lifts (Section IV) of this guideline.

Operators must document the area inspection before each use. The Aerial Lift Pre-Use Inspection Checklist form (Appendix B) shall be completed and turned into the Environmental Health and Safety Department. This form is used for non-motorized vehicles (scissor lift, man-lift, boom lift). These forms shall be retained for a minimum of three years.
A Driver Vehicle Inspection Report (Appendix A) shall be used before operating an aerial lift vehicle (bucket truck, crane, motorized vehicle, etc.). The completed Vehicle Driver Inspection form shall be submitted as stated on the bottom of the form.

All manlifts shall be inspected using the Manlift Inspection Certification Record (Appendix C) by a competent person at least once every quarter. This form should remain with the appropriate manlift until all available inspection slots have been filled out. Once completed, the form shall be turned in to the Environmental Health and Safety Department. These inspection forms shall be retained for a minimum of three years.

Manlifts found to be unsafe shall be removed from service immediately until properly repaired.

VI. Operating Requirements for Scaffolding

Scaffolds shall be furnished and erected for persons engaged in work that cannot be done safely from the ground or from solid construction. The following general requirements shall be followed when erecting and using all scaffolding, however, additional specific conditions and guidelines shall be required depending on the type of scaffolding to be erected and utilized.

- The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.
- Scaffolds shall not be loaded in excess of the working load for which they are intended and shall be capable of supporting without failure at least four times the maximum intended load.
- Any scaffold damaged or weakened from any cause shall be immediately repaired and shall not be used until repairs have been completed.
- All load-carrying timber members of scaffold framing shall be a minimum of 1,500 f (Stress Grade) construction grade lumber. All planking shall be Scaffold Grade as recognized by grading rules for the species of wood used.
- All planking or platforms shall be overlapped (minimum 12 inches) or secured from movement. Scaffold planks shall extend over their end supports not less than 6 inches no more than 18 inches.
- Guardrails shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Rails shall be installed no less than 36 inches and no more than 42 inches high, with a mid-rail. Toe boards shall be a minimum of 4 inches in height.
- Scaffolds shall be provided with a screen between the toe board and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. Standard Wire one-half-inch mesh or the equivalent, where persons are required to work or pass under the scaffolds.
• An access ladder or equivalent safe access shall be provided.
• The poles, legs, or uprights of scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.
• Materials being hoisted onto a scaffold shall have a tag line.
• Employees shall not work on scaffolds during storms or high winds, or when covered with ice or snow, unless all ice or snow is removed and planking sanded to prevent slipping.
• Wire or fiber rope used for scaffold suspension shall be capable of supporting at least six times the intended load.
• When acid solutions are used for cleaning buildings over 50 feet in height, wire rope supported scaffolds shall be used.
• Overhead protection is required for men exposed to overhead hazards. Additional personal protective equipment may be required depending on the specific hazards involved with the work being done.

The following are prohibited in the erection and use of scaffolding:

• The use of shore scaffolds or lean-to scaffolds is prohibited.
• Lumber sizes, when used in this section, refer to nominal sizes except where otherwise stated.
• Scaffolds shall be secured to permanent structures, through use of anchor bolts, reveal bolts, or other equivalent means. Window cleaners’ anchor bolts shall not be used.
• Special precautions shall be taken to protect scaffold members, including any wire or fiber ropes, when using a heat-producing process.

VII. Training and Recordkeeping

It is the responsibility of each department to ensure that their employees (operators) receive the required training. Training can be provided by the Environmental Health and Safety department.

Training records will be retained by the Environmental Health and Safety office for three years.
Appendix A

UNIVERSITY OF NORTHERN COLORADO
AERIAL LIFT VEHICLE INSPECTION REPORT

[Table with sections A, B, and C]

PRE-TRIP CONDITION OF THE ABOVE VEHICLE IS SATISFACTORY

Pre-Trip Driver’s Printed Name: [Signature]

POST-TRIP CONDITION OF THE ABOVE VEHICLE IS SATISFACTORY

Post-Trip Driver’s Printed Name: [Signature]
### Appendix B

### University of Northern Colorado

Aerial Lift Pre-Use Inspection Checklist

<table>
<thead>
<tr>
<th>Operator:</th>
<th>Date:</th>
<th>Aerial or Scissor Lift ID #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Type:</td>
<td>Date:</td>
<td>Location / Building:</td>
</tr>
<tr>
<td>Scissor Lift</td>
<td>Articulating Boom</td>
<td>Department:</td>
</tr>
<tr>
<td>Man Lift</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

#### 1. Safety Precautions

| Windy Conditions – less than 20 to 25 MPH (Less than manufacturer guidelines) | Horn |
| Personal Protective Equipment | Gauge |
| Pedestrian / Traffic – Barriers, Tape, Signs | Brakes |
| Wheel Check and/or Brakes | Lights |
| Working Surface – Level | Steering |
| Power Lines or Electrical Source | Attachments or Accessories |
| Load Limits | Backup Alarm or Warning Buzzer |
| Outriggers | Warning Lights |
| Other: | Other |

#### 2. Check Operations

<table>
<thead>
<tr>
<th>Status</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK NO NA</td>
<td>OK NO NA</td>
</tr>
</tbody>
</table>

#### 3. Vehicle Inspections

<table>
<thead>
<tr>
<th>Oil Level</th>
<th>Lift and Travel Controls and Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Oil Level</td>
<td>Placards, Decals, and Control</td>
</tr>
<tr>
<td>Fuel Level</td>
<td>ID labels</td>
</tr>
<tr>
<td>Check the Lift and Surrounding</td>
<td>Handrails, Guardrails and Safety Chains</td>
</tr>
<tr>
<td>Area for Leaks</td>
<td>Platform Deck and Toeboards</td>
</tr>
<tr>
<td>Coolant Level</td>
<td>Other</td>
</tr>
<tr>
<td>Tire Pressure and Conditions of Wheels and Tires</td>
<td></td>
</tr>
<tr>
<td>Batter and Charger</td>
<td></td>
</tr>
<tr>
<td>Ground Control Switches</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

#### 4. Platform Lift Inspection

<table>
<thead>
<tr>
<th>Status</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK NO NA</td>
<td>OK NO NA</td>
</tr>
</tbody>
</table>

#### Comments:

---

**IF THE AERIAL LIFT FAILS ANY PART OF THIS INSPECTION, REMOVE THE KEY AND REPORT THE PROBLEM TO YOUR SUPERVISOR. DO NOT ATTEMPT TO MAKE REPAIRS UNLESS YOU ARE A TRAINED AND AUTHORIZED SERVICE PERSON.**
Appendix C

University of Northern Colorado
Quarterly Manlift Inspection Certification Record

Manlift Identification number: __________ Location: __________

The Manlift inspection shall cover, but is not limited to the following items:

- Steps and step fastenings
- Rails-supports and fastenings
- Rollers and Slides
- Belt and Belt Tension.
- Handholds and Fastenings.
- Floor Landings and guardrails.
- Lubrication.
- Limit Switches, warning signs, lights, and illumination.
- Drive Pulley, bottom (boot) pulley and Clearance, pulley supports.
- Motor, Driving Mechanism, Brake
- Electrical Switches.
- Vibration and Misalignment
- Note if any worn gears are present while in use.
- (There are to always be 12 Pre-Use inspection forms at all times)

<table>
<thead>
<tr>
<th>Date</th>
<th>Inspector Name</th>
<th>Inspector Signature</th>
<th>Comments *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If maintenance is needed, Call in the Work Order immediately and reference the WO# in the Comments box.

Return completed form to the Environmental Health and Safety Department
**Appendix D**  
Locations of Aerial Lifts  
On UNC Campus  
As of 2/24/2016

<table>
<thead>
<tr>
<th>Location</th>
<th>Brand Name</th>
<th>Model #</th>
<th>Serial #</th>
<th>Inspecting Dept.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kepner Hall</td>
<td>Genie Industries</td>
<td>PLC-19</td>
<td>1488-15440-b</td>
<td>HVAC</td>
</tr>
<tr>
<td>Ross Hall</td>
<td>Genie Industries</td>
<td>AWP-205-AC</td>
<td>3000-16934</td>
<td>HVAC</td>
</tr>
<tr>
<td>Butler-Hancock</td>
<td>Genie Industries</td>
<td>AWP-36</td>
<td>3895-9692</td>
<td>Electrical</td>
</tr>
<tr>
<td>Recreation Center</td>
<td>Up Right Inc.</td>
<td>62695</td>
<td>UR-3389</td>
<td>Rec. Center</td>
</tr>
<tr>
<td>Recreation Center</td>
<td>Sky Jack (Scissor Lift)</td>
<td>SkyJack III</td>
<td>2700-7765</td>
<td>Rec. Center</td>
</tr>
<tr>
<td>University Center</td>
<td>Genie Industries</td>
<td>AWP-24</td>
<td>3894-7820</td>
<td>UC</td>
</tr>
<tr>
<td>Frasier</td>
<td>Genie Industries</td>
<td>AWP-305</td>
<td>148-0670</td>
<td>PVA</td>
</tr>
<tr>
<td>Frasier</td>
<td>Up Right Inc.</td>
<td>62611</td>
<td>5016</td>
<td>PVA</td>
</tr>
<tr>
<td>Heat Plant</td>
<td>Genie Industries</td>
<td>PLC-30P</td>
<td>1483-5711</td>
<td>Heat Plant</td>
</tr>
</tbody>
</table>