Brunel Energy, Inc.

Aerial Work Platforms & Scissor Lifts

Contents

1. Purpose

1.1. Brunel Energy, Inc., herein, the "Company," has established a program compliant with OSHA 29 CFR 1926.453 Aerial Lifts, to reduce the risk of physical injury or property damage in areas where aerial lifts are in operation.

1.2. Aerial lifts are commonly used in construction, inspection, and repair services to lift employees to an elevated work position. Proper operation and use of aerial lifts can make completion of tasks at elevation safer and more efficient. However, unsafe use, operation and aerial lift work practices can result in serious injury. This program has been developed due to the hazards associated with improper use and the Company's concern for the safety of individuals in and around this type of equipment. In addition, this program outlines general, operating, maintenance, inspection and training requirements governing safe aerial lift use at the Company.

2. Applicability

2.1. This policy applies to employees, subcontractors and/or visitor(s) of the Company. For the purposes of this policy, an employee shall be considered on the job whenever he/she is:

2.1.1. On or in, any company or client property, including parking areas; or

2.1.2. On Company time even if off company premises (including paid lunch, rest periods and periods of being on call).

2.2. As a condition of employment, Company employees are required to abide by additional governmental or customer policies and requirements that may be imposed at a worksite in addition to the requirements of these policies and procedures. Nothing set forth in this policy constitutes, construes, or interprets in any way as a contract of employment.

3. Definitions

3.1. ***Aerial lift*** is any vehicle-mounted device used to elevate personnel, including extendable boom platforms, aerial ladders, articulating (jointed) boom platforms, vertical towers, or a combination of the before mentioned.

3.2. ***Chain Sling*** is a sling consisting of a master hook, chain links, and sling hooks. Alloy steel chain slings are durable and used for lifting heavy loads.

3.3. ***Wire Rope Sling*** is a sling composed of wire rope that is either braided, bridled, cable laid, or strand laid.

3.4. ***Wire Mesh Sling Chain Sling*** is a sling consisting of a master hook, chain links, and sling hooks. Alloy steel chain slings are durable and used for lifting heavy loads.

3.5. ***Nylon Web Sling*** is a loop of material (nylon web), which connects the load to the lifting device.

3.6. ***Tuflex Round Sling – Tuflex™ Polyester Round Slings*** are fine denier polyester yarns that are twisted into a bundle and encased in double wall seamless polyester.

3.7. ***Snellen*** is a chart to determine visual acuity.

4. Responsibilities

4.1. Manager(s) and HSE Supervisor(s) shall:

4.1.1. Coordinate employee training and certify that all operators receive annual training and receive certification prior to the operation of any aerial lift.

4.1.2. Ensure that only trained and qualified individuals use aerial lifts.

4.1.3. Verify employee compliance with the principles and practices outlined in the Aerial Lift Safety Program.

4.1.4. Provide specific operational training for each aerial lift.

4.1.5. Observe the operation of aerial lifts and correct unsafe practices.

4.2. Employees/Operator(s) shall:

4.2.1. Read the Aerial Lift Safety Program.

4.2.2. Comply with all aspects of this safety program.

4.2.3. Complete the Daily Pre-Use Inspection Checklist before operating any aerial lift.

4.2.4. At least annually review the procedures outlined in this document.

4.2.5. Observe the operation of the aerial lift and report unsafe practices to your supervisor.

4.2.6. Successfully complete a training program and receive certification prior to the operation of any aerial lift.

4.3. Subcontractor(s):

4.3.1. Subcontractors operating aerial lifts are expected to meet or exceed the requirements described in this policy and comply with all applicable statutes and regulations.

5. Procedure

5.1. General

5.1.1. All platform occupants will be provided, at minimum, with a cell phone or departmental radio (preferably both) to ensure constant communication with ground level/event management personnel.

5.1.2. When operating/utilizing an aerial work platform and/or scissor lift outside, all platform occupants will be provided an instrument to gauge wind speed. Should wind speed exceed the manufacturer's guidelines, the occupant must be immediately lowered to ground level and exit the platform.

5.1.3. Please note that personnel on-site will have a similar instrument used for gauging wind speed and tracking weather (e.g., lightning, etc.). However, due to wind speeds varying at different heights, departmental guidelines mandate platform occupants also have the ability to track it. If a platform occupant feels unsafe at any time and/or for any reason, he/she has the sole authority to be lowered to the ground level and exit the platform without fear of repercussion/reprimand.

5.2. Hazards Associated with Aerial Lifts

5.2.1. The following hazards, among others, can lead to personal injury or death:

5.2.1.1. Fall from elevated level,

5.2.1.2. Objects falling from lifts,

5.2.1.3. Tip-overs,

5.2.1.4. Ejections from the lift platform,

5.2.1.5. Structural failures (collapses),

5.2.1.6. Electric shock (electrocutions),

5.2.1.7. Entanglement hazards,

5.2.1.8. Contact with objects, and

5.2.1.9. Contact with ceilings and other overhead objects.

5.3. General Safe Work Practices

5.3.1. Adhere to all applicable manufacturer's guidelines/requirements.

5.3.2. Adhere to all applicable Occupational Safety and Health Administration (OSHA)

5.3.3. Only authorized personnel shall operate an aerial lift.

5.4. Scissor Lifts

5.4.1. Scissor lifts that have extendable platforms (or extend beyond the equipment's wheelbase) are not covered by the aerial lift OSHA requirements (1926.453).

5.4.2. However, since scissor lifts are mobile, they do meet the definition of scaffold (1926.451) the specific requirements for mobile scaffolds in the scaffold standard (1926.452(w) must be met. Please refer to attached regulations for details.

5.4.3. Must be braced by cross, horizontal, or diagonal braces.

5.4.4. Must be plumb, level, and squared.

5.4.5. Scissor lifts with wheels should be locked with positive wheel and/or wheel and swivel locks to prevent movement of the lift while it is use in a stationary manner.

5.4.6. Power systems used to propel the scissor lift shall be designed for such use.

5.4.7. Must be stabilized to prevent tipping during movement.

5.4.8. Employees shall not be allowed to ride in the scissor lift unless the following conditions are met:

5.4.8.1. The surface on which the lift is being moved is within 3 degrees of level and free of pits, holes, and obstructions.

5.4.8.2. The height to base width ratio of the lift during movement is two to one or less unless the lift is designed and constructed to meet or exceed national recognized stability test requirements.

5.4.8.3. Outrigger frames, when used, are installed on both sides of the scaffold.

5.4.8.4. When power systems are used the propelling force is applied directly to the wheels and does not produce a speed in excess of 0.3 MPs.

5.4.9. No employee is on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.

5.4.10. Platforms shall not extend outward beyond the base supports of the scaffold unless outrigger frames or equivalent devices are used to ensure stability.

5.4.11. When leveling the scissor lift is necessary, screw jacks or equivalent means shall be used.

5.4.12. Caster stems and wheel stems shall be pinned or otherwise secured in lift legs or adjustment screws.

5.4.13. Before a lift is moved, each employee on the lift shall be made aware of the move.

5.5. Aerial Lifts

5.5.1. Must conform to ANSI A92.2-1969 in design and construction. Includes extensible boom platforms, aerial ladders, articulating boom platforms, and vertical towers.

5.5.2. Any lift that is “field modified” for use other than that intended by the manufacturer must have been certified in writing by the manufacturer or by equivalent entity.

5.5.3. Aerial ladders shall be secured in the lower traveling position by locking device on top of the truck cab, and the manually operated device at the base of the ladder before the truck is moved for highway travel.

5.5.4. For extensible and articulating boom platforms, lift controls shall be tested each day prior to use to ensure they are working properly.

5.5.5. Only authorized persons shall operate an aerial lift. Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.

5.5.6. Employees shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

5.5.7. A Positioning device shall be worn, and a lanyard attached to the boom or basket when working from an aerial lift. (As of January 1, 1998, Subpart M stipulated body belts are not acceptable part of a personal fall arrest system. The use of a body belt in a tethering system or in a restraint system is acceptable).

5.5.8. Boom and basket limit specified by the manufacturer shall not be exceeded.

5.5.9. The brakes shall be set and when outriggers are used, they shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline provided it is safe to do so.

5.5.10. The aerial truck shall not be moved when the boom is elevated in a working position with men in the basket, except for equipment which is specifically designed for this type of operation.

5.5.11. Articulating boom and extensible boom platforms (i.e., personnel carriers) shall have both platform (upper) and lower controls. Controls must be clearly marked, and the lower controls shall not be operated unless permission is obtained from the employee in the lift except in an emergency.

5.5.12. Climbers shall not be worn while performing work from an aerial lift.

5.5.13. The insulated portion of an aerial lift shall not be altered in any manner that will reduce the insulating value.

5.5.14. Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled, and outriggers are in stowed position.

5.5.15. All electrical tests shall conform to ANSI A92.2-1969

5.5.16. Bursting safety factor: the provisions of ANSI standard A92.2-1969 section 4.9 shall apply to all critical hydraulic and pneumatic components. Critical components are those in which failure would result in a free fall or rotation of the boom. All noncritical components shall have a bursting safety factor of at least 2:1.

5.5.17. Operators shall not wear any loose clothing or any accessory that can catch in moving parts.

5.5.18. Before the machine is started, the operator must walk completely around the machine to ensure everyone, and everything is clear of the machine.

5.5.19. 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.

5.5.20. 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.

5.5.21. The insulated portion (if applicable) of an aerial / scissor lift shall not be altered in any manner that might reduce its insulating value.

5.5.22. Any signs, plates, or decals which are missing or illegible must be replaced.

5.5.23. 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.

5.5.24. Aerial/scissor lift devices with noted, reported deficiencies shall not be operated until repairs are made and equipment is authorized for use.

5.5.25. Operators must report all accidents, regardless of fault and severity, to their supervisor.

5.6. Pre-start Inspection

5.6.1. Prior to each work shift, conduct a pre-start inspection to verify that the equipment and all its components are in safe operating condition. Follow the manufacturer’s recommendations and include a check of:

5.6.2. Vehicle Components

5.6.2.1. Proper fluid levels (oil, hydraulic, fuel and coolant).

5.6.2.2. Leaks of fluids.

5.6.2.3. Wheels and tires.

5.6.2.4. Battery and charger.

5.6.2.5. Lower-level controls.

5.6.2.6. Horn, gauges, lights, and backup alarms.

5.6.2.7. Steering and brakes.

5.6.3. Lift Components

5.6.3.1. Operating and emergency controls.

5.6.3.2. Personal protective devices.

5.6.3.3. Hydraulic, air, pneumatic, fuel and electrical systems.

5.6.3.4. Fiberglass and other insulating components.

5.6.3.5. Missing or unreadable placards, warnings, or operational, instructional and control markings.

5.6.3.6. Mechanical fasteners and locking pins.

5.6.3.7. Cable and wiring harnesses.

5.6.3.8. Outriggers, stabilizers and other insulate.

5.6.3.9. Loose or missing parts.

5.6.3.10. Guardrail systems.

5.6.4. Do not operate any aerial lift if any of these components are defective until it is repaired by a qualified person. Remove defective aerial lifts from service (tag out) until repairs are made.

5.7. Work Zone Inspections

5.7.1. Employers must ensure that work zones are inspected for hazards and take corrective actions to eliminate such hazards before and during operation of an aerial lift. Items to look for include:

5.7.1.1. Drop-offs, holes, or unstable surfaces such as loose dirt.

5.7.1.2. Inadequate ceiling heights.

5.7.1.3. Slopes, ditches, or bumps.

5.7.1.4. Debris and floor obstructions.

5.7.1.5. Overhead electric power lines and communication cables.

5.7.1.6. Other overhead obstructions.

5.7.1.7. Other hazardous locations and atmospheres.

5.7.1.8. High wind and other severe weather conditions, such as ice; and

5.7.1.9. The presence of others in close proximity to the work.

5.8. Safe Work Practices Before Operation

5.8.1. Consideration shall be given to the amount of wind. Follow the manufacturer's instruction regarding operation in windy conditions. As a general rule aerial lifts shall not be operated in winds exceeding 25mph although this can vary depending on the model of equipment.

5.8.1.1. At 20mph wind speeds or anticipated gusts, lifts will be lowered to a maximum height of 20 feet.

5.8.1.2. At 25mph wind speeds or anticipated gusts, lifts will be grounded.

5.8.1.3. Employees have the authority to Stop Work and ground the lift if the lift is deemed unsafe.

5.8.2. Guardrails must be installed, and access gates or openings must be closed before raising the platform.

5.8.3. Boom and platform load limits specified by the manufacturer shall not be exceeded.

5.8.4. Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled, and outriggers are in stowed position (if equipped).

5.8.5. Consideration shall be given to the protection of bystanders via barricading, having another employee keep bystanders at a safe distance or by other means.

5.8.6. Aerial lifts shall not be operated from trucks, scaffolds, or similar equipment.

5.9. Safe Operation During Operation

5.9.1. Attention shall be given towards the direction of travel, clearances above, below and on all sides.

5.9.2. Employees shall not sit or climb on the guardrails of the aerial lift.

5.9.3. Planks, ladders, or other devices shall not be used on the work platform.

5.9.4. An aerial lift shall not be moved when the boom is elevated in a working position with employees in the basket.

5.9.5. Aerial lift shall not be placed against another object to steady the elevated platform.

5.9.6. Aerial lift shall not be used as a crane or other lifting device.

5.9.7. Aerial lift devices shall not be operated on grades, side slopes or ramps that exceed the manufacturer's recommendations.

5.9.8. The brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface.

5.9.9. The speed of aerial 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.

5.9.10. Stunt driving and horseplay shall not be permitted.

5.9.11. Booms and elevated platform devices shall not be positioned in an attempt to jack the wheels off the ground.

5.9.12. The area surrounding the elevated platform shall be cleared of personnel and equipment prior to lowering the elevated platform.

5.9.13. All equipment must be secured on the inside of the aerial lift

5.9.14. Operators are to call for assistance if the platform or any part of the machine becomes entangled.

5.9.15. Employees shall not use aerial lifts that have an obstructed view to the rear unless the vehicle has a reverse signal alarm audible above the surrounding noise level or the vehicle is backed up only when an observer signals that is safe to do so.

5.10. Safe Work Practices After Operation

5.10.1. 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.

5.10.2. Aerial 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.

5.11. While Operating an Aerial Lift

5.11.1. A personal fall arrest or travel restraint system shall be worn and attached to the boom or basket when working from an aerial lift.

5.11.2. Ensure that access gates or openings are closed.

5.11.3. Stand firmly on the floor of the bucket or lift platform.

5.11.4. Do not climb on or lean over guardrails or handrails.

5.11.5. Do not use planks, ladders, or other devices as a working position.

5.12. Operation/Traveling/Loading

5.12.1. Do not exceed the load-capacity limits. Take the combined weight of the worker(s), tools and materials into account when calculating the load.

5.12.2. Do not use the aerial lift as a crane.

5.12.3. Do not carry objects larger than the platform.

5.12.4. Do not drive with the lift platform raised (unless the manufacturer's instructions allow this).

5.12.5. Do not operate lower-level controls unless permission is obtained from the worker(s) in the lift (except in emergencies).

5.12.6. Do not exceed vertical or horizontal reach limits.

5.12.7. Do not operate an aerial lift in high winds above those recommended by the manufacturer.

5.12.8. Do not override hydraulic, mechanical, or electrical safety devices.

5.13. Overhead Protection

5.13.1. Be aware of overhead clearance and overhead objects, including ceilings.

5.13.2. Do not position aerial lifts between overhead hazards if possible.

5.13.3. Treat all overhead power lines and communication cables as energized and maintain a minimum clearance distance of at least 10 feet (3 meters) away between overhead powerlines that are 50kV or less and any part of the equipment or load unless the aerial lift is insulated for the voltage involved, and the work is performed by a qualified person, then the clearance distance between the uninsulated portion of the aerial lift and the powerline may be referenced to the distance provided in Appendix 8.1 TABLE S-5 – Approach Distances for Qualified Employees – Alternating Current.

5.13.4. Ensure that the power utility or power line workers de-energize power lines in the vicinity of the work.

5.14. Stability in the Work Zone

5.14.1. The brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline. Use wheel chocks on sloped surfaces when it is safe to do so.

5.14.2. Set up work zone warnings, such as cones and signs, when necessary to warn others.

5.14.3. Insulated aerial lifts offer protection from electric shock and electrocution by isolating you from electrical ground. However, an insulated aerial lift does not protect you if there is another path to the ground (for instance, if you touch another wire). To maintain the effectiveness of the insulating device, do not drill holes in the bucket.

5.15. Changing and Charging Batteries

5.15.1. Battery charging installations must be located in areas designated for that purpose.

5.15.2. Facilities must provide for: flushing and neutralizing spilled electrolyte, fire protection, protection of charging apparatus from damage by trucks, adequate ventilation for dispersal of fumes from gassing batteries.

5.15.3. Precautions must be taken to prevent open flames, sparks, or electric arcs in battery charging areas.

5.15.4. Employees charging and changing batteries shall be authorized to do the work, trained in the proper handling, and required to wear protective clothing, including face shields, long sleeves, rubber boots, aprons, and gloves.

5.16. Maintenance

5.16.1. Any aerial lift not in safe operating condition must be removed from service.

5.16.2. Authorized personnel must make all repairs.

5.16.3. Repairs to the fuel and ignition systems of aerial lifts that involve fire hazards must be conducted only in locations designated for such repairs.

5.16.4. Aerial lifts in need of repairs to the electrical system must have the battery disconnected before such repairs.

5.16.5. Only use replacement parts that are currently recommended by the manufacturer.

6. Training

6.1. Employees who are authorized to operate aerial lifts must receive training prior to engaging in their duties, and at least every three (3) years thereafter.

6.2. The training is to ensure that the Aerial Lift Safety Plan is understood. The supervisor will also ensure that authorized aerial lift operators have acquired the necessary practical skills required for safe operation.

6.3. Training is offered by qualified trainers and trained persons in each department in possession of the lift. An authorized trainer will perform operational training with each employee to determine if operators have the knowledge, training, and skills necessary to use the aerial lift.

6.4. Operational training will consist of a combination of general safety instruction, practical/operational training (demonstrations performed by the trainer, and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace. All operational training must be conducted under close supervision.

6.5. Proficiency testing of classroom and "hands-on" skills is required. OSHA 1910.67 (b)(1) and 1926.453 (a)(1) Incorporate ANSI A92.2 by reference.

6.6. Only trained and authorized persons are allowed to operate an aerial lift. Training should include:

6.6.1. Explanations of electrical, fall, and falling object hazards.

6.6.2. Procedures for dealing with hazards.

6.6.3. Recognizing and avoiding unsafe conditions in the work setting.

6.6.4. Instructions for correct operation of the lift (including maximum intended load and load capacity).

6.6.5. Demonstrations of the skills and knowledge needed to operate an aerial lift before operating it on the job.

6.6.6. When and how to perform inspections; and

6.6.7. Manufacturer's requirements.

6.7. Workers should be retrained if any of the following conditions occur:

6.7.1. An accident occurs during aerial lift use,

6.7.2. Workplace hazards involving an aerial lift are discovered, or

6.7.3. A different type of aerial lift is used. Employers are also required to retrain workers who they observe operating an aerial lift improperly.

7. Reference

7.1. ANSI A92.2-1969 - Vehicle-Mounted Elevating and Rotating Aerial Devices

7.2. OSHA 1910.67 - Vehicle-mounted elevating and rotating work platforms.

7.3. OSHA 1926.453 – Arial Lifts

8. Appendix

8.1. TABLE S-5 – Approach Distances for Qualified Employees – Alternating Current

APPENDIX 8.1 TABLE S-5 APPROACH DISTANCES FOR QUALIFIED EMPLOYEES ALTERNATING CURRENT

TABLE S-5 - APPROACH DISTANCES FOR QUALIFIED

EMPLOYEES - ALTERNATING CURRENT

Voltage range (phase to phase)	Minimum approach distance
300V and less	Avoid Contact
Over 300V, not over 750V	1 ft. 0 in. (30.5 cm).
Over 750V, not over 2kV	1 ft. 6 in. (46 cm).
Over 2kV, not over 15kV	2 ft. 0 in. (61 cm).
Over 15kV, not over 37kV	3 ft. 0 in. (91 cm).
Over 37kV, not over 87.5kV	3 ft. 6 in. (107 cm).
Over 87.5kV, not over 121kV	4 ft. 0 in. (122 cm).
Over 121kV, not over 140kV	4 ft. 6 in. (137 cm).