



**Duke University - Facilities Management Department
Environmental Safety and Health Program**

FALL PROTECTION PROGRAM

Area: All FMD Organizations

Date Effective: 1 April 2019

Issue No.: 1

Revision: 0

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A. Purpose

1. To identify and define potential hazards and injury prevention measures related to Fall Protection in FMD work environments.

B. Scope

1. This program applies to all FMD employees and supplemental labor working for FMD.

C. Policy

1. FMD will take all reasonable measures to provide a safe workplace. All FMD operations must be performed in a manner, which will prevent any undesirable effects to FMD and/or Duke employees, assets, the local community, and the environment.
2. The provisions of this program and all applicable standards will be followed to ensure the safety of personnel performing service or maintenance activities to equipment, machines, or systems. Failure to follow the requirements of the Fall Protection Program will be cause for disciplinary action.

D. Definitions

1. **Aerial Lift:** Vehicle mounted elevating work platform (e.g. Boom Lifts, Articulating Telescoping Boom Lifts, and Upright Lifts).
2. **Anchorage:** A secure point of attachment for equipment such as lifelines, lanyards, deceleration devices, and rope descent systems.
3. **Cage:** An enclosure mounted on the side rails of a fixed ladder or fastened to a structure behind the fixed ladder that is designed to surround the climbing space of the ladder. A cage can also be called a "cage guard" or "basket guard".
4. **Competent Person:** A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
5. **Fall Hazard:** Any condition on a walking-working surface that exposes an employee to a risk of harm from a fall on the same level or to a lower level.
6. **Fall Protection:** Any equipment, device, or system that prevents an employee from falling from an elevation or mitigates the effect of such a fall. Required when work is being done at heights at or above 4 feet in general industry and 6 feet in construction.
7. **Floor Hole:** An opening measuring less than 12 inches but more than 1 inch in its least dimension in any floor, platform, pavement or yard; through which materials but not persons may fall; such as a belt hole, pipe opening, or slot opening.
8. **Floor Opening:** An opening measuring 12 inches or more in its least dimension, in any floor, platform, pavement, or yard through which persons may fall; such as a hatchway, stair or ladder opening, pit, or large manhole. Floor openings occupied by elevators, dumb waiters, conveyors, machinery, or containers are excluded from this subpart.
9. **Guardrail:** A barrier erected along an unprotected or exposed side, edge, or other area of a walking working surface to prevent employees from falling to a lower level.
10. **Handrails:** A single bar or pipe supported on brackets from a wall or partition, as on a stairway or amp, to furnish persons with a handhold in case of tripping.
11. **Harness:** A device, usually worn around the waist which, by reason of its attachment to a lanyard and lifeline or a structure, will prevent a worker from falling. A harness can also be called a "safety belt".
12. **Lanyard:** A rope, suitable for supporting one person. One end is fastened to a safety belt or harness and the other end is secured to a substantial object or a safety line.
13. **Low Position:** The lowest allowable setting on a man lift. This position shall be used when moving a man lift to another location.

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14. **Personal Fall Protection System:** A system used to arrest an employee in a fall from a walking-working surface. It consists of a body harness, anchorage, and connector. The means of connection may include a lanyard, deceleration device, lifeline, or a suitable combination of these.
15. **Personal Fall Arrest Systems:** A system (including all components) an employer uses to provide protection from falling or to safely arrest an employee's fall if one occurs. Examples of personal fall protection systems include personal fall arrest systems, positioning systems, and travel restraint systems.
16. **Platforms:** An extended step or landing breaking a continuous run of stairs.
17. **Pre-Fabricated Scaffold:** Scaffold that comes in pre-fabricated sections, with only one way to connect and build.
18. **Restraint:** Equipment, such as a body belt that does not protect the worker who is already in the process of falling by stopping the after it has happened, but by preventing the worker from accessing the potential hazard to begin with.
19. **Scaffold:** Any temporary elevated platform and its supporting structure used for supporting workmen or materials or both.
20. **Standard Railing:** A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of person.
21. **Tieback:** An attachment between an anchorage (e.g., structural member) and a supporting device (e.g., parapet clamp or cornice hook).
22. **Toeboards:** A barrier secured along the sides and ends of a platform, to guard against the falling of material.
23. **Travel Restraint System:** A combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support that an employer uses to eliminate the possibility of an employee going over the edge of a walking-working surface.
24. **Wall Opening:** An opening measuring at least 30 inches high and 18 inches wide in a wall or partition, through which persons may fall. This includes the need for a guardrail if there is a drop of more than four feet.
25. **Warning line:** A barrier erected to warn employees that they are approaching an unprotected side or edge, and which designates an area in which work may take place without the use of other means of fall protection.
26. **Well:** A permanent, complete enclosure around a fixed ladder.

E. Responsibilities

1. FMD supervisors/managers are responsible for:
 - a. Selecting and providing required personal protective equipment.
 - b. Reviewing with employee's job hazards in their area related to working from heights.
 - c. Ensuring that employees are conducting and documenting an inspection of Aerial and Scissor Lifts prior to each work shift, using Appendix A.
 - d. Ensuring that employees are conducting a visual inspection of Scaffolds prior to each work shift.
 - g. Ensuring that employees are inspecting Personal Fall Protection equipment before each use.
 - e. Retaining all inspection logs for the Aerial and Scissor Lifts for 1 year.
 - f. Ensuring that employees are trained prior to using Personal Fall Protection or Aerial and Scissor Lifts.
 - g. Notifying FMD Safety if there is a need for employee(s) to be retrained.
 - h. Ensuring the removal of defective equipment.
 - i. Defective Aerial and Scissor Lifts must be taken out of service and tagged "Do Not Use".
 - ii. Personal Fall Protection must be taken out of service and destroyed.
2. FMD employees who work from heights are responsible for:
 - a. Documenting a visual inspection of Aerial and Scissor Lifts prior to each work shift, using Appendix A.
 - b. Conducting a visual inspection of Scaffold before use each work shift, if used that day.
 - c. Wearing any required PPE for that area or specific work, while working from heights.
 - d. Using Personal Fall Protection Systems as detailed in Section F below.
 - e. Operating Aerial and Scissor Lifts as detailed in Section F below.
 - f. Using Scaffolds as detailed in Section F Below.

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- g. Inspecting personal fall protection equipment before each use.
- h. Notifying supervisor of defective equipment.

3. FMD Safety is responsible for:

- a. Coordinating annual in-person training for employee who work from heights.
- b. Working with supervisors to locate and log Aerial and Scissor lifts.
- c. Working with supervisors to ensure that defective Aerial and Scissor Lifts are taken out of service and tagged "Do Not Use".
- d. Working with supervisors to ensure that defective Personal Fall Protection must be taken out of service and destroyed.

F. Fall Protection Systems

1. Personal Fall Protection Systems

- a. Personal Fall Arrest
 - i. Lifelines, lanyards and deceleration devices should be attached to an anchorage point and connected to the body-belt or body harness in the same manner as they would be when used to protect employees.
 - ii. Body-belts shall be used for restraint only, not fall arrest.

G. Aerial Lifts and Scaffolds

1. Aerial Lifts

- a. All manufacturer instructions must be maintained WITH the equipment for reference by operators at all times.
- b. The assigned operator must make a documented visual inspection of equipment prior to each work shift, see Appendix A.
- c. Only employees qualified by training or experience may operate aerial man lifts.
- d. Always report any defective equipment as soon as identified.
 - i. Defects that affect safe operation must be removed from service and repaired prior to use.
- e. Operate Aerial Lifts according to manufacturer's instructions.
- f. Always maintain a safe distance from phone lines, power lines and overhead obstructions.
- g. Ensure equipment is on a solid surface before operation.
- h. Operator will remain on the platform at all times while operating the equipment and will not, at any time, stand on the guard rails.
- i. A restraint device (i.e. shock absorbing lanyard, full body harness, or belt) shall be used during operation.
 - i. The point of attachment must be to the designated anchor point installed by the Equipment Manufacturer; either during original manufacture, or a retrofitted kit.
 - ii. The anchor point is generally identified with a label and in the Operator Instruction Guidelines.
 - iii. Personnel cannot attach lanyards to adjacent poles, structures or equipment while they are working from the aerial lift.

2. Scaffolds

- a. FMD personnel erecting scaffolding any higher than twelve feet, must get prior approval from FMD Safety.
- b. Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.
- c. Scaffolding must be prefabricated scaffolding and will be inspected by a qualified person (i.e. contractor) before use.
- d. When constructed higher than four feet a handrail must be in place.
- e. All manufacturer guidelines and instructions for use must be adhered to.
- f. Scaffold parts from different manufacturers shall not be intermixed.
- g. Fall protection must be provided on all supported and suspended scaffolds.

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h. For some types of scaffolds (such as single-point or two-point adjustable suspension scaffolds), both a guardrail system and personal fall protection are required.

i. On some types of scaffolds, guardrail systems are not available or able to be used; only personal fall arrest systems are required (catenary, float and needle beam scaffolds {used in FEL/TUNL}, boatswains' chairs, roof bracket scaffolds and ladder jack scaffolds). Therefore, the employer must provide personal fall arrest systems for fall protection on these types of scaffolds.

j. In public access areas and where scaffolding may be unsupervised, ladder secured systems should be in place to mitigate unwanted access.

**Because Scissors Lifts do not fall within the definition and/or OSHA category of an Aerial Lift, they are not addressed by the Aerial Lift provisions of Subpart L. There are no OSHA provisions that specifically address Scissors Lifts; but, since they do meet the definition of a scaffold (§1926.451), we must comply with the other applicable provisions of Subpart L when using scissors lifts. Since Scissors Lifts are mobile, the specific requirements for mobile scaffolds in the scaffold standard (§1926.452(w)) must be met.*

H. Inspections

1. Personal Fall Protection Systems must be regularly inspected. Any component with any significant defect, such as cuts, tears, abrasions, mold, or undue stretching; alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids, or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; non-functioning parts; or wearing or internal deterioration in the ropes must be withdrawn from service immediately, and should be tagged or marked as unusable, or destroyed.
2. Employees shall inspect Personal Fall Protection Systems before each use.
3. A 'Competent Person' shall conduct and document an annual inspection of all personal fall protection systems.
4. A visual inspection of an Aerial Lift must be completed and documented prior to each work shift (if used that day). See Attachment A - Aerial Lift Inspection Sheet.
5. A visual inspection of Scaffold must be completed before each work shift.

K. Training

1. Employees who work at heights will be provided this program's awareness training by their supervisor or FMD Safety on this Program's contents and requirements.
2. Employees who work from heights must be trained prior to use of Aerial and Scissor Lifts and Personal Fall Protection Systems.
3. Employees who work at heights will be required to have annual training conducted by a competent person.
4. Employees must be retrained if any of the following conditions occur:
 - a. An accident occurs during aerial/scissor lift or scaffold use.
 - b. Inappropriate use of an aerial/scissor lift or scaffold are discovered.
 - c. A different type of equipment is purchased for use.
 - d. Upon employee request.

L. References

1. 29 CFR 1910.21
2. 29 CFR 1910.67
3. 29 CFR 1926
4. 29 CFR 1926.452
5. 29 CFR 1926.453
7. https://www.osha.gov/OshDoc/data/Hurricane_Facts/fall_protection_qc.pdf
8. <https://www.osha.gov/walking-working-surfaces/index.html>
9. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9713&p_table=STANDARDS

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Appendix A – Aerial & Scissor Lift Inspection Sheet

Type Equipment: _____ **Unit Number:** _____
Location Maintained: _____ **Work Order No., if applicable:** _____
Inspected By: _____ **Date Inspected:** _____

Indicate by initialing "Yes" if item checked is adequate, operational, and safe. Initial "No" to indicate repair or other action is required. Initial N/A to indicate "Not Applicable". **Noted defects found must be repaired prior to equipment use.**

	Yes	No	N/A
Items to be checked			
a. Fuel level (applicable for engine drive only)			
b. Engine oil level (applicable for engine drive only)			
c. Hydraulic system level, visible leaks			
d. Battery, water level, condition, state of charge			
e. Tires, proper inflation, damage			
f. Platform structure, cleanliness, physical condition			
g. Instruction placards, warning placards in place and legible			
h. Eye wash bottle, fire extinguisher (if applicable)			
i. Test the tilt alarm (if applicable)			
From the ground control station (Do all applicable portions):			
a. Raise and lower platform/boom			
b. Raise platform/boom and lower with auxiliary power			
c. Raise platform/boom and lower with manual bleed valves			
d. Telescope out and in			
e. Swing platform right and left			
From the platform control station:			
a. Fasten safety harness			
b. Telescope out and in			
c. Raise and lower platform/boom			
d. Swing right and left			
e. Extend and level outrigger (if applicable)			
f. Drive machine forward and reverse, right and left			
g. Raise platform/boom and descend with auxiliary power			
Other/Comments:			

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