

SUBJECT AREA CONTENT

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Management System: [Worker Safety and Health](#)

Subject Area: **Fall Protection**

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Effective Date: Apr 25, 2014 (Rev 1.4)	Subject Matter Expert:	Management System Executive:	Management System Steward:
Periodic Review Due: Apr 25, 2017	Michael Gaffney	Ed Nowak	Gail Mattson

Introduction

This subject area contains procedures for the safety of all BNL staff, contractors, visitors, and guests on-site and off-site who work on elevated surfaces and ladders, or are exposed to fall hazards in excess of four feet.

This subject area does not apply when individuals are inspecting, investigating, or assessing workplace conditions before the start of construction or after construction has been completed, unless the employee or supervisor deems it necessary. Some of the emergency actions by Fire-Rescue preclude the use of fall protection as described in this subject area.

Construction of electric transmission and distribution lines and equipment is **not** covered under the scope of this subject area. Fall protection requirements regarding these situations are found in other parts of the OSHA Construction and General Industry standards.

See the [Aerial Lifts](#) Subject Area for procedures on safely operating aerial lifts.

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Overview of Content (see section for full process)

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- [Fixed Ladders, Design, Inspection, and Use Subject Area](#)

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None

Training Requirements and Reporting Obligations

This subject area contains training requirements. See the [BNL Training and Qualifications](#) Web site. Fall Protection training is required for all employees, contractors, visitors, and guests who work at heights of 6 feet or greater. Additionally, those employees, contractors, visitors, and guests working on aerial lifts must receive training on the use of such equipment. See the [Aerial Lifts](#) Subject Area for training requirements for using aerial lifts.

This subject area does not contain reporting obligations.

External/Internal Requirements

Requirement Number	Requirement Title
10 CFR 851	Worker Safety and Health Program
29 CFR 1910	Labor/Occupational Safety and Health Standards
29 CFR 1926	Labor/Safety and Health Regulations for Construction
BSA Contract No. DE-AC02-98CH10886 - Clause I.119 (DEAR 970.5223-1)	Integration of Environment, Safety and Health into Work Planning and Execution (DEC 2000)
O 414.1D Admin Chg 1 (May 8, 2013)	Quality Assurance

References[Aerial Lifts](#) Subject Area[Interim Procedure 2012-002, Fixed Ladders, Design, Inspection, and Use](#)[Job Assessment \(JAF\) & Additional Medical Surveillance \(AMS\) Forms, Occupational Medicine Clinic](#) Home page[OHSAS 18001 Program](#) Subject Area

OSHA Fall Protection Standard, 29 CFR 1926.500

[Work Planning and Control for Experiments and Operations](#) Subject Area**Standards of Performance**

Managers shall analyze work for hazards, authorize work to proceed, and ensure that work is performed within established controls.

All staff and users shall ensure that they are trained and qualified to carry out their assigned responsibilities, and shall inform their supervisor if they are assigned to perform work for which they are not properly trained or qualified.

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PROCEDURE: ASSESSING FALL HAZARDS

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

1. Assessing Fall Hazards

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site. It also applies to staff working at a height of four or more feet.

Required Procedure

Step 1	Evaluate jobs and facilities for fall hazards. See the exhibit Fall Hazards .
Step 2	Perform job risk assessments and facility risk assessments for existing and potential fall hazards. See the OHSAS 18001 Program Subject Area, and the Work Planning and Control for Experiments and Operations Subject Area.
Step 3	Evaluate fall hazards with a competent person to determine the best feasible strategy for elimination or control.
Step 4	Eliminate fall hazards when feasible.
Step 5	Control fall hazards with engineering controls, administrative controls, personal protective equipment, training, and documented standard operating procedures.

References

[OHSAS 18001 Program](#) Subject Area

[Work Planning and Control for Experiments and Operations](#) Subject Area.

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PROCEDURE: FALL HAZARD PROTECTION

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

2. Fall Hazard Protection

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

Fall hazards must first be eliminated through job planning, work process changes and then engineering controls, if feasible. When work process changes or engineering controls are not feasible, then personal fall arrest systems, administrative controls, and training must be instituted.

Step 1

A competent person determines if engineering controls can eliminate or lessen the hazard of the work area or job site. Apply fall protection in the following order of preference:

1. Process change resulting in no work at height or no fall hazard exposure;
2. Guardrails or enclosures;
3. Covers – load bearing for covering floor openings;
4. Aerial lifts;
5. Fall restraint;
6. Motion stopping system with full body harness;
7. Fall Arrest System with full body harness;
8. Safety nets.

Note: See the [Aerial Lifts](#) Subject Area for procedures on safely operating aerial lifts.

Step 2	The supervisor eliminates the need to work at height where feasible.
Step 3	The supervisor controls the fall hazard with engineering controls for fall arrest.
Step 4	The supervisor assigns staff trained and qualified in fall protection to perform the tasks.
Step 5	The Environmental Safety and Health Coordinator and supervisor initiate medical approval to climb or work at heights above 5 feet by completing an OMC Job Assessment Form (JAF) indicating the conditions requiring climbing or work above 5 feet (see the Occupational Medicine Clinic Home page, Job Assessment (JAF) & Additional Medical Surveillance (AMS) Forms).
Step 6	The supervisor verifies in the field correct implementation of the prescribed fall protection.

References

[Aerial Lifts](#) Subject Area

[Job Assessment \(JAF\) & Additional Medical Surveillance \(AMS\) Forms](#), [Occupational Medicine Clinic](#) Home page

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PROCEDURE: WALKING AND WORKING SURFACES

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

3. Walking and Working Surfaces

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

Step 1	<p>Keep areas of the workplace in good condition, clean, orderly, and as dry as possible, including</p> <ul style="list-style-type: none"> • All spills should be cleaned promptly. Floors in work areas must be kept free of scraps, chips, oil spills, and other debris; • Areas which are constantly wet should have non-slip surfaces or mats where workers may walk or work. Where wet processes are used, good drainage must be maintained and proper footwear should be worn; • Every floor, working place, and passageway must be maintained free from protruding nails, splinters, holes, and loose boards; • Where mechanical handling equipment is used, such as lift trucks, sufficient safe clearance must be provided for foot and vehicular traffic; • No obstructions that could create a hazard are permitted in aisles. All permanent aisles must be easily recognizable; • As a general condition, a standard toe board and guardrail are required wherever people walk near or beneath the open sides of a platform or similar structures; where things could fall from a structure; or where things could fall from a structure into machinery below.
Step 2	<p>Do not use boxes, chairs, buckets, desks, or any other device not specifically intended for use in extending reach.</p>
Step 3	<p>Contact the F&O Facility Project Manager to correct hazards related to inadequate maintenance. These hazards may include:</p> <ul style="list-style-type: none"> • Icy sidewalks; • Wet floors; • Slippery conditions; • Torn floor coverings, or damaged pavements; • Damaged stair treads; • Missing or broken handrails or guardrails.

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PROCEDURE: WEARING PERSONAL PROTECTIVE EQUIPMENT

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

4. Wearing Personal Protective Equipment

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

Step 1	Use Personal Protective Equipment (PPE) to minimize fall hazards where engineering controls do not eliminate the hazard, or in conjunction with engineering controls. See the exhibit Personal Protective Equipment: Inspection and Maintenance .
Step 2	Use appropriate footwear with non-slip soles and treads in good condition when working at height.
Step 3	Use only full-body harnesses for fall arrest. The use of a body belt is prohibited, except for fall restraint/prevention. Note: Firefighters may use belt harnesses instead of full-body harnesses when working on aerial ladders.
Step 4	Ensure that only trained and qualified personnel are performing work at heights.
Step 5	Apply fall protection PPE in order of priority as follows: <ol style="list-style-type: none"> 1. Apply restraint systems first wherever feasible; 2. Positioning systems may be applied second, as long as access and egress to and from the work location uses a fall prevention system; 3. Fall arrest systems may be used as a last resort to provide fall protection to personnel whose work can not be feasibly protected by either eliminating the need to work at height, or a fall prevention system.

Guidelines

Contact BNL Fire and Rescue at 631-344-2222, 911, or by radioing for help for staff who have fallen. Do not work

where an emergency cannot be immediately observed and prompt rescue assistance summoned.

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PROCEDURE: ROOFING

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

5. Roofing

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

Step 1	The supervisor ensures staff are protected on roofs from falling through openings, and falling off edges through the use of engineered barricades, guardrails, covers, warning lines, safety monitoring systems, or other engineering or administrative controls.
Step 2	Ensure that the design of the personal fall arrest systems for roof work is performed by a qualified person.
Step 3	<p>Low-slope or Flat Roofs – Protect each employee engaged in roofing activities on low-slope roofs, with unprotected sides and edges 6 feet (1.8 m) or more above lower levels from falling by</p> <ul style="list-style-type: none"> • Guardrail systems, safety net systems, personal fall arrest systems; or • A combination of warning line system and guardrail system; • Warning line system and safety net system; or • Warning line system and personal fall arrest system; or

- Warning line system and safety monitoring system. See the exhibit [Designated Areas: Roofing](#).

On roofs 50 feet (15.25 m) or less in width the use of a safety monitoring system alone (i.e., without the warning line system) is permitted.

Step 4

Steep Roofs – Protect each employee on a steep roof with unprotected sides and edges 6 feet (1.8 m) or more above lower levels from falling by

- Guardrail systems with toe boards;
- Safety net systems; or
- Personal fall arrest systems.

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PROCEDURE: USING SCAFFOLDS

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

6. Using Scaffolds

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

Fall protection is required for all scaffold use 6 feet above a lower level.

Step 1

A competent person selects scaffolds for the task based upon the type of work to be conducted and the

	working load to be supported.
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Step 2	A competent person inspects the scaffold before it is used. The users of the scaffold perform daily inspections.
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Step 3	Ensure all personnel using a scaffold are trained and qualified. Note: A qualified person may repair a scaffold if necessary.
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Step 4	Disassemble scaffolds before storage. Scaffolds should be stored where they can be inspected easily and can be reached without causing accidents. The storage area should be well ventilated and away from sources of heat and moisture.
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PROCEDURE: USING PORTABLE LADDERS

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

7. Using Portable Ladders

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

For more information on using, inspecting, maintaining, and storing portable ladders, see the exhibit [Portable Ladders: Use, Inspection, Maintenance, and Storage](#).

Step 1	Eliminate the need to work at height if feasible.
Step 2	Substitute an aerial lift, or safer means, instead of using portable ladder. Note: See the Aerial Lifts Subject Area for procedures on safely operating aerial lifts.
Step 3	The supervisor ensures staff are trained in proper selection and use of portable ladders.
Step 4	Select portable ladders according to use, height, load, and stability.
Step 5	Workers inspect and maintain ladders in good condition.

References

[Aerial Lifts](#) Subject Area

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PROCEDURE: USING FIXED LADDERS

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

8. Using Fixed Ladders

Effective Date: **Apr 25, 2014**

Subject Matter Expert: [Michael Gaffney](#)

Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Note: Additional fixed ladder requirements can be found in the [Interim Procedure 2012-002, Fixed Ladders, Design, Inspection, and Use](#).

Required Procedure

Step 1	Eliminate the need to work at height if feasible.
Step 2	The supervisor ensures staff are trained in proper use of fixed ladders.
Step 3	Inspect and maintain ladders in good condition.
Step 4	Incorporate engineered fall protection systems where feasible.

References

[Interim Procedure 2012-002, Fixed Ladders, Design, Inspection, and Use](#)

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PROCEDURE: USING STAIRWAYS

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

9. Using Stairways

Effective Date: **Apr 25, 2014**Subject Matter Expert: [Michael Gaffney](#)Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

Step 1	Use handrails when ascending and descending stairways.
Step 2	Keep one hand free for the handrail when carrying objects on stairways.
Step 3	F&O Facility Project Manager ensures stair treads are properly maintained. Tread surface should be reasonably slip-free and in good condition, free of debris and objects.

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PROCEDURE: STEEL ERECTION

Management System: [Worker Safety and Health](#)

Subject Area: [Fall Protection](#)

10. Steel Erection

Effective Date: **Apr 25, 2014**Subject Matter Expert: [Michael Gaffney](#)Management System Executive: [Ed Nowak](#)

Applicability

This information applies to BNL staff and non-BNL staff working at or for BNL either on- or off-site.

Required Procedure

All steel erection must be planned for staff fall hazard exposures.

Step 1	Verify that the scope of work is covered by the OSHA Steel Erection Standard.
Step 2	Write a fall protection plan. Identify the fall protection requirements for steel erectors. Fall Protection Plans should follow the requirements in OSHA Fall Protection Standard, 29 CFR 1926 Subpart R Appendix A.
Step 3	Ensure all steel erectors have the appropriate fall protection training.
Step 4	Perform work in accordance with fall protection requirements in the fall protection plan.

References

OSHA Fall Protection Standard, 29 CFR 1926 Subpart R, Appendix A

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DEFINITIONS

Definition: [Fall Protection](#)

Term	Definition
aerial lift	Equipment such as powered platforms, vehicle-mounted elevated and rotating work platforms, extensible boom platforms, aerial ladders, articulating boom platforms, vertical towers and powered-industrial truck platforms.
anchor point	A secure point of attachment for lifelines, lanyards or deceleration (grabbing) devices. Anchor points for fall arrest must be capable of supporting 5000 pounds.

body harness (also referred as full-body harness)	An interconnected set of straps that may be secured about a person in a manner that distributes the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.
competent person	A person who is capable of recognizing existing and predictable hazards and has the authority to take corrective action. Additionally, a person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system, or any component thereof, as well as in their application and use with related equipment. To be considered a competent person for equipment inspections, the manufacturer's training guidelines must be followed. Each Department/Division is responsible for identifying a competent person who has been qualified in accordance with this subject area.
Controlled Access Zone	A work area designated and clearly marked in which certain types of work (such as over-hand bricklaying) may take place without the use of conventional fall protection systems -- guardrail systems, personal fall arrest systems, or safety net systems -- to protect the employees working in the zone. Access to the zone must be controlled to limit the number of workers exposed to fall hazards.
deceleration device	Any mechanism, such as a rope, grabbing device, rip stitch lanyard, specially woven lanyard or automatic self-retracting lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.
deceleration distance	The additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.
F&O Facility Project Manager	<p>Manages and operates specific facility(s) within a designated complex area, related equipment and systems; ensuring resolution of problems, maintaining safe and reliable operations. Serves as the single point of contact for the execution of the obligations agreed to between the approving parties of the Facility Use Agreements (FUA).</p> <p>Note: This is not a one to one replacement of all the responsibilities of the former Building Manager, but contains many of the Building Managers' responsibilities as described in the Building Manager R2A2.</p>
fixed ladder	A ladder, including an individual rung ladder, which is permanently attached to a structure, building, or equipment.
guardrail	A barrier at least 42 inches high erected to prevent personnel from falling from working levels more than 30 inches above the floor, ground, or other working areas of a building.
handrail	A single bar or pipe supported on brackets from a wall or partition, as on a stairway or ramp, to furnish persons with a handhold in case of tripping.
hole	A void or gap more than 1 inch in its least dimension in a floor, roof, or other walking/working surface.
ladder	A device typically used to gain access to a different elevation consisting of two or more structural members crossed by rungs, steps, or cleats.
lanyard	A flexible line of rope or strap that generally has a connector at each end for connecting the body harness to a deceleration device, lifeline, or anchor point.

lifeline	A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline). This serves as a means for connecting other components of a personal fall arrest system to the anchorage.
low slope roof	A roof having a slope of less than or equal to 4 in 12 (vertical to horizontal). A roof with approximately a 19.5 degree slope or less.
lower levels	Those areas or surfaces to which an employee can fall. Such areas include ground levels, floors, platforms, ramps, runways, excavations, pits tanks, material, water, equipment, structures, or portions thereof.
opening	A gap or void 30 inches or more high and 18 inches or more wide in a wall or partition, through which personnel can fall to a lower level.
personal fall arrest system	A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, and body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
positioning device system	A body harness system rigged to allow an employee to be supported on an elevated vertical surface such as a wall so the employee can work with both hands free while leaning.
qualified person	A person who has a recognized degree, or through extensive knowledge, experience, and training demonstrated his/her ability in a subject matter.
restraint line	A device, which is attached between the employee and an anchorage to prevent the employee from walking or falling off an elevated surface.
roof	Exterior surface on the top of a building.
rope grab (grabbing device)	A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.
safety monitoring system	Consists of a competent person capable of recognizing fall hazards and who monitors the safety of other employees from the same walking/working surface. The safety monitor must be within visual sighting distance of the employee being monitored and close enough to communicate orally. Safety monitors should have no other responsibilities which could take their attention away from monitoring. The safety monitor is responsible for warning the employee when it appears that the employee is unaware of a fall hazard or is acting unsafely.
scaffold	Any temporary elevated or suspended platform, and its supporting structures, used for supporting employees or materials or both.
self-retracting lifeline/lanyard	A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal movement and which, after onset of a fall, automatically locks the drum and arrests the fall (usually within two feet or less).
snap hook	A connector consisting of a hook-shaped member with a normally-closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically, closes to retain the object. Only locking snap hooks are permitted at BNL.
standard railing	A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons.
tie-off	A procedure of connecting directly or indirectly to an anchorage point.
toeboard	A low protective barrier that prevents material and equipment from falling to lower levels and protects staff from falling.

unprotected sides and edges	Any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 42 inches high.
vertical lifeline	A component consisting of a vertically hanging flexible line for connection to an anchor point at one end that serves as a means for connecting other components of a personal fall arrest system to the anchor point.
walking/working surface	Any surface, whether horizontal or vertical, on which an employee walks or works, including floors, roofs, ramps, bridges, and runways.
work area	That portion of a walking/working surface where job duties are being performed.

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Standards-Based Management System



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Subject Area: [Fall Protection](#)

Designated Areas: Roofing

Effective Date: **Apr 25, 2014**

The following conditions and requirements must be met to use designated areas instead of other fall protection measures:

- A. The work must be temporary, such as maintenance on roof top equipment;
- B. Designated areas must be established only on surfaces that have a slope from horizontal of 10 degrees or less;
- C. The designated area must consist of an area surrounded by a rope, wire, or chain and supporting stanchions.
 1. After being erected with the line attached, stanchions must be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion;
 2. The line must have a minimum breaking or tensile strength of 500 pounds;
 3. The line must be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over;
 4. The line must be installed in such a manner that its lowest point is no less than 34 inches nor more than 39 inches from the work surface;
 5. The line forming the designated area must be clearly visible from any unobstructed location within the designated area up to 25 feet away;
 6. The stanchions must be erected as close to the work area as is permitted by the task;
 7. The perimeter of the designated area must be erected no less than 6 feet from the unprotected side or edge;
 8. Access to the designated area must be by a clear path formed by two lines attached to stanchions.

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Fall Hazards

Effective Date: **Apr 25, 2014**

Other organizations performing tasks within your facilities (i.e., Facilities & Operations [F&O] performing work in a non-F&O facility) must perform fall hazard assessments unless their fall hazard exposures are covered by an existing assessment.

Falls may be classified into three general categories:

1. Slips, trips, and falls on the same level;
2. Falls on stairs;
3. Falls from elevations.

The following are fall hazards that require protection:

- Open-sided floors, platforms, and runways four feet or more in height;
- Open-sided floors, ramps, and walkways that are adjacent to or above dangerous operations must be guarded regardless of height;
- Wall openings from where there is a drop of more than 4 feet;
- Open windows from which there is a drop of more than 4 feet, and the bottom of the window is less than 3 feet above the floor or platform;
- Hatchways and chutes floor openings;
- Any opening more than 4 feet in elevation where a significant portion of the body is leaning over or through to perform work.
- Skylights that are even with the roof surface, or that may otherwise serve as a walking/working/sitting surface;
- Scaffolds over 6 feet;
- Fixed ladders over 20 feet;
- Aerial lifts (see the [Aerial Lifts](#) Subject Area for procedures on safely operating aerial lifts).

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Personal Protective Equipment: Inspection and Maintenance

Effective Date: **Apr 25, 2014**

I. Impact Loading

Any fall arrest system or component that has been used to arrest a fall (impact loading) must be immediately removed from service until a competent person inspects it and determines it to be undamaged.

II. Inspection

Visual equipment inspections must be conducted by personnel before each use. If, upon inspection, a piece of equipment shows any signs of wear it must immediately be removed from service and the supervisor notified. Look for ANSI specification and manufacturing date on the label. Examples of wear include

- Unreadable label;
- Fraying;
- Loose cable strands.

III. Maintenance

When needed, fall protection devices should be washed in warm water using a mild detergent, rinsed thoroughly in clean warm water and allowed to dry at room temperature. Stow equipment in a clean area away from strong sunlight and extreme temperatures, which could degrade materials. Check the manufacturer's recommendations for cleaning, maintenance, and storage information.

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Portable Ladders: Use, Inspection, Maintenance, and Storage

Effective Date: **Apr 25, 2014**

I. Use of Portable Ladders

The proper ladder must be selected for the task. General rules include the following:

- A. The ladder chosen must be long enough to provide access to the work area without necessitating standing on the top two steps of a stepladder or the top three rungs of a straight ladder;
- B. The ladder selected must be sufficient for the weight of the employee plus the weight of any tools and materials:
 1. TYPE 1A-Extra-heavy industrial ladder will support 300 lbs;
 2. TYPE 1-Heavy-duty industrial ladder will support 250 lbs;
 3. TYPE 2-Medium-duty commercial ladder will support 225 lbs;
 4. TYPE 3-Light-duty household ladder will support 200 lbs.

Note: Portable ladders used by firefighters follow the NFPA rating system.

- C. When a straight ladder is used to gain access to a roof, the side rails should extend at least three feet above the support point at the eave, gutter, or roof line;
- D. Never splice together short ladders to form a longer ladder;
- E. Never place ladders on boxes, barrels, or other unstable bases for additional height;
- F. Ladders must be placed on level surfaces. Although ladder feet or shoes provide an important measure of safety, they cannot compensate for uneven ground unless they are designed with adjustable feet;
- G. Be alert to slippery surfaces. Non-slip bases are not a substitute for safety in placing, lashing, or holding a ladder on oily, metal, concrete, or other slippery surfaces;
- H. Do not use ladders for unintended purposes;
 - I. Step ladders (also known as 'A' Frame Ladders) must not be used as straight ladders. All four feet must be placed on level ground and the spreaders must be locked before using step ladders;
 - J. Do not use a metal ladder when working on or near electrical equipment;
- K. The distance from the bottom of a straight ladder to its support wall must be one foot for each 4 foot rise the working length of the ladder;
- L. Where possible, straight ladders should be secured with a rope or wire at the top and blocked at the bottom;
- M. The top two steps and platform of a stepladder must not be used, and the top three rungs of a straight ladder must not be used;
- N. Do not over-reach, jump or slide a ladder while on it. Ladders must not be moved, shifted, or extended while occupied;
- O. Always face the ladder and maintain 3 points of contact while ascending or descending;
- P. Loose tools or materials should be raised by means of a rope after the climber has reached the working position. Carrying heavy loads up or down ladders is prohibited. Tool/work belts are advised to be worn;
- Q. Barricades and warning signs should be posted when ladders are placed near doors or other locations where they could be struck;
- R. Two workers should handle and set up all extension ladders greater than 24 feet;

- S. Ladders should not be used by more than one person at a time unless they are designed for such use;
- T. The bracing on the backside rails of stepladders is designed only for increasing stability, not for climbing;
- U. Ladders must not be used horizontally as platforms, runways, or scaffolds. Extension ladders must have proper overlap.
 - 1. Three-foot overlap for 32-foot ladder;
 - 2. Four-foot overlap for 32- to 36-foot ladder;
 - 3. Five-foot overlap for 36- to 48-foot ladder;
 - 4. Six-foot overlap for 48-foot ladder;
- V. Make certain that both automatic locks of the extension ladder are in proper position before ascending the ladder;
- W. Straight ladders and stepladders that exceed 10 feet may be held by another person for steadying;
- X. The area around the top and bottom of the ladder must be kept clear;
- Y. Hard hats must be worn within an area beneath elevated work where objects could fall from a height and strike a worker.

II. Inspection of Ladders

Before using any ladder, the user must inspect it:

- A. Carefully examine the ladder for broken or missing rungs or cleats, broken side rails, and other damaged parts;
- B. All cleats, rungs, and side rails must be free of grease, oil, paint, or other slippery substances;
- C. The ladder should be equipped with feet that are secured in place;
- D. The joint between steps and side rails must be tight, and all hardware and fittings should be attached firmly. Movable parts should operate freely without binding or undue play;
- E. All wood parts must be free of sharp edges and splinters;
- F. Visually inspect the ladder: ensure it is free of shakes, warping, decay, or other irregularities;
- G. Metal ladders must be free of sharp edges, burrs, and corrosion;
- H. Inspect for dents or bends in side rails, rungs or cleats;
 - I. Check step to side rail connections, hardware connections, and rivets;
- J. If a ladder tips over, inspect the ladder for damage before continuing work;
- K. Check for paint or branding of ladders which may conceal or cause defects.

III. Maintenance of Ladders

Damaged ladders must be withdrawn from service and either repaired or destroyed. When a defect or unsafe condition is found, staff should tag or mark the ladder so that it will not be used. Defective or unsafe conditions must be reported to the supervisor. Field repairs and the fabrication of improvised ladders are prohibited. Never try to straighten a bent or bowed ladder. Remove it from service immediately. Do not paint wooden ladders with solid color paints. This may mask cracks in the wood and make them hard to see. Clear wood preservative can be used to protect bare wood.

If the ladder is exposed to greases, oils, or other slippery substances, it must be cleaned of the substance with solvents or steam. If the slippery substance is not completely removed, the ladder must be removed from service.

IV. Storage of Ladders

Ladders should be stored where they can be inspected easily and can be reached without causing accidents. They should be chained, roped, or secured in a manner so that they will not fall down.

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