
FALL PROTECTION

A. Introduction

The purpose of this fall protection procedure is to prevent employees from falling off, onto, or through working levels and to protect employees from being struck by falling objects. This procedure applies to all City of Pittsburgh employees, contractors, and visitors.

B. Responsibilities

Department Management

- Responsible for insuring that this procedure is implemented and adhered to, without deviation, whenever applicable.
- Responsible for providing the resources necessary (including training, equipment, etc.) to comply with this procedure.
- Ensure that affected employees are aware of the provisions of this procedure and are trained prior to assignment to tasks affected by this procedure.
- Responsible for the identification of fall hazards and activities requiring fall protection within the department.
- Enforce the use and selection of proper fall protection equipment whenever required.
- Responsible for continual observational safety checks of work operations and the enforcement of this safety procedure.

Office of Risk Management

- Assist management and employees with instructions on the requirements of fall protection.
- Ensure that affected employees have been informed of relevant hazards and specified procedures during training sessions.
- Assist the department to arrange initial fall protection training for new employees as necessary.

Employees

- Responsible to bring to the attention of management any unsafe or hazardous conditions or acts that may cause injury to either themselves or any other employees.
- Comply with the established procedures to prevent falls.
- An employee shall not attempt to perform any work activity that involves the potential for falling without addressing these procedures.

Contractors

- Outside contractors must be informed of this fall protection procedure if they will be working in an area where fall protection is required as detailed in this plan.
- Contractors will be responsible for identifying and supplying any required equipment needed to comply with this fall protection procedure.

C. Requirements

Fall Protection Procedure:

This Fall Protection Procedure addresses the use of conventional fall protection and identifies the following specific activities that require such fall protection. Work activities where fall protection is needed include – (fall protection must be appropriate to the application):

- Requirement for Working on Aerial Lifts - all working surfaces on lifts are to have standard railings on all open sides AND all occupants tied off at all times as detailed in this procedure, “Personal Fall Protection Systems”. The area immediately beneath the working aerial lift is to be demarcated and labeled “caution men working above” and designated as a hard hat area while inside the marked area.
- Requirement for Unprotected Sides - Every working/walking area with unprotected sides six or more feet above adjacent floor or ground level shall be guarded by a standard rail consisting of a top rail, intermediate rail, and posts. A standard rail shall have a vertical height of 42 inches from the upper surface of the top rail to the working/walking surface. The top rail shall be smooth surfaced, rigid, and be of strength to withstand at least 200 pounds of top rail pressure. The intermediate rail shall be approximately halfway between the top rail and the working/walking surface. Posts or railing anchors shall be constructed to withstand a load of at least 200 pounds applied in any direction. Railings shall be provided with a toeboard whenever; 1) a person can pass beneath the open sides, 2) there is moving machinery or, 3) there is equipment with which falling materials could create a hazard. Toeboards shall be 4 inches in vertical height from its top edge to the level of the working/walking surface. Toeboards shall be secured with not more than $\frac{1}{4}$ inch clearance above the working/walking surface. Where standard railings are not practical Personal Fall Protection Systems must be used as detailed in this procedure.
- Stairs having four or more risers shall be equipped with standard stair railing or standard handrails with a vertical height of not more than 34 inches but not less than 30 inches from the upper surface of the top rail to the surface of the tread in line with the face of the riser at the forward edge of the tread. Standard hand railing shall be provided on at least one side of closed stairways and on the open sides of all exposed stairways and stair platforms. Runways shall be guarded by a standard railing on all open sides four feet or more above floor or ground level. All scaffolds are to be equipped with standard railings on all open sides four feet or more above floor or ground level.
- Requirement for Floor Openings - all working surfaces including ladderways, floor openings, hatchways and chute floor openings, pits and trap door floor openings, wall openings, manhole floor opening, and every floor hole into which a person can accidentally walk shall be guarded with a standard railing constructed as detailed in the “Requirement for Unprotected Sides” or guarded with a cover of standard strength. For accessing manholes and floor hatches, a perimeter barrier six feet around the opening is required and must be maintained. Every opening six or more feet above adjacent floor or ground level shall be guarded by a standard rail or equivalent on all open sides. Railings shall be provided with a toeboard whenever, beneath the open sides, a person can pass, there is moving machinery or there is equipment with which falling materials could create a hazard.
- Requirement for Roof Edges - A control zone must be established where access is limited to 6 feet from the edge of all roof edges. If activity involves working within this six foot control zone then Personal Fall Protection Systems must be used as detailed in this procedure.

D. Hazard Identification

- It is the responsibility of the individual using fall protection equipment to know how to properly use the equipment and tools prior to working with such equipment.
- Work areas should be kept clear and free from obstructions, and good housekeeping and safe work practices should be followed. Factors such as slippery surfaces, poor lighting, electrical hazards, and moving mechanical parts shall be considered and addressed prior to commencing work.
- Employees are required to wear personal fall protection when working at unprotected heights of 6 feet or more, when another fall protection system is not provided. It should be noted that falls from lower levels can be just as dangerous as high level falls.

E. Engineering Controls

- Engineering methods or controls shall be used to eliminate a specific fall hazard. Controls such as guardrails, scaffolds, and aerial platforms are considered to be an effective means of protection from falling.
- When engineering controls are not feasible or do not safely eliminate or control the hazard, other forms of fall protection must be used.

F. Personal Fall Protection Systems

- Personal fall arrest systems are passive systems that prevent a worker from falling onto another level. The basic fall arrest system required for City of Pittsburgh employees includes anchorage, shock absorbing lanyard, and a full body harness.
- Anchorage is a secure point of attachment for a fall arrest system and must be independent from the means supporting or suspending a worker. Anchorage must be able to support a weight of at least 5000 pounds for each worker attached. The anchorage should be located at a height that reduces free fall 6 feet or less. The anchorage should also be located so that if a free fall occurs, an attached worker will not collide with it or contact any lower level hazard.
- A lanyard connects the body harness to a deceleration device, lifeline or anchorage. Lanyards are short flexible lines with connectors at each end made of rope, high tensile strength webbing, or steel cable. Lanyards and lifelines must have a minimum breaking strength of 5000 pounds. A lanyard needs to be attached to the anchorage point in a way that does not reduce its strength. This must be done with a locking snap-hook or D-ring. A locking snap-hook or D-ring has a positive locking mechanism and a spring loaded keeper that does not allow the keeper to open under pressure without someone first releasing the mechanism. Two snap-hooks or D-rings shall not be attached together.
- A full body harness is made of straps secured around the thighs, pelvis, waist, chest and shoulders. The full body harness is attached to a lanyard or lifeline at the D-ring in the center of the back near shoulder level or above the head. In a fall arrest, a full body harness distributes the impact throughout the body, putting less stress on the body and permitting better circulation. A full body harness also keeps the body suspended upright while waiting for a rescue. Body belts do not offer these advantages and shall not be used as a personal fall protection system.
- **Tie-off procedures** - The tie-off point to a lifeline or anchorage should be at or above the D-ring on the back of the workers full body harness. This will reduce the free fall distance. Tie-off is the act of connecting, directly or indirectly, to an anchorage point. A tie-off using a knot in the lanyard or lifeline at any location can drastically reduce the strength of the line and is not permitted. A tie-off around "H" or "I" beams can also reduce the strength of the line. A webbing lanyard or wire cord lifeline should be used around beams to protect the lanyard or lifeline from the sharp edges of the beam. A lanyard must be utilized where a free fall distance must not exceed 6 feet. Deceleration distance during a fall must not exceed 3.5 feet

- Other fall protection devices may include:
 - Vertical Lifelines - If used must have a separate line for each worker.
 - Horizontal Lifeline - If used must be installed and used under the supervision of a trained and qualified person.
 - Self-Retracting Lifeline - If used must have a separate retractor for each user.
 - Before using a personal fall protection system, the user shall know the limits of the equipment, know proper anchoring and tie-off techniques, know the methods of use, and know proper equipment inspection and storage.

G. Inspection

- Fall protection devices must be inspected before and after each use. Harnesses, belts and lanyards shall be examined for mildew, wear, damage, and deterioration. Anchor points, snap rings, D-rings, scaffolding, and guardrails shall be inspected for damage that could affect their efficiency. Defective or damaged parts must be taken out of service immediately, tagged and management personnel notified.
- Personal fall protection systems that have been used to arrest a fall must not be used again unless they are inspected by a qualified person who determines that they are undamaged and able to be reused. Equipment shall be stored in a clean area away from strong sunlight and extreme temperatures which could degrade the materials.

H. Training

- Initial fall protection training will be conducted for all City of Pittsburgh employees who must perform work requiring the use of fall protection. Police, Fire and EMS receive the appropriate training through their specific state or nationally certified curriculum.
- A representative of the Office of Risk Management is available to assist department management in arranging for training on the use of personal fall protection systems. This informal training is a requirement prior to anyone using a fall protection device and will include: equipment requirements, inspection procedures, proper storage, proper anchorage and tie-off procedures, and limits of equipment.