City of Portage

Fall Protection

Program

Table of Contents

Purpose and Scope: …… 3
Goals:…….. 3
Definitions: 3
Types of Fall Protection Systems:..... 5
Fall Protection Locations:..... 6
Fall Protection Guidelines – Options: 7
Inspection of Fall Protection Systems: 9
- Full Body Harnesses:..... 9
- Lanyards/Shock Absorbing Lanyards:..... 9
- Snap hooks:..... 10
- Self-Retracting Lanyards:..... 10
- Tie-off Adapters/ Anchorages:..... 10
- Articulating Man Lift:..... 10
- Horizontal Lifelines:..... 10
- Guardrails:..... 10

Storage and Maintenance of Fall Protection Equipment:..... 11
Training:..... 11
Enforcement:..... 11
Rescue Procedures:..... 11
Fall Investigation:..... 12
Program Evaluation:..... 12
Contractors:..... 12
Full Body Harness Annual Inspection Checklist:..... 13
Lanyards Annual Inspection Checklist:..... 14
Snaphooks/Carabiners Annual Inspection Checklist:..... 15
Self-Retracting Lanyard Annual Inspection Checklist:..... 16

Fall Protection Program

PURPOSE AND SCOPE

The purpose of this fall protection program is to establish guidelines to protect all employees engaged in outdoor or indoor work activities that expose them to potential falls from elevations.

The scope of this fall protection program includes all municipal buildings and staff. In particular, those staff engaged in work activities, which expose them to falls from heights of 6 feet or more when engaged in construction activities, falls from 4 feet or more in general industry and falls of 20 feet or more from ladders.

GOALS

The goal of this Fall Protection Program is to prevent the occurrence of falls from the elevations of 6 feet or higher. This goal will be accomplished through effective education, engineering and administrative controls, use of fall protection systems, and enforcement of the program. This fall protection program will be continually improved upon to prevent all falls from occurring.

DEFINITIONS

Anchor Point: A secure point of attachment for lifelines, lanyards, or deceleration devices. An anchor point must be capable of supporting at least 5000 pounds (3600 pounds if engineered/ certified by a qualified person) per person and must be independent of any anchorage being used to support or suspend platforms.

Authorized Person: A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or job site (i.e., building maintenance, roof repair, etc.).

Competent Person: A person capable of identifying existing and predictable hazards in the surroundings or working conditions, which are hazardous or dangerous to employees. A person who has the authorization to take prompt corrective action to eliminate such hazards.

Connector: A device which is used to couple (connect) parts of the personal fall arrest system together.

Deceleration Device: Any mechanism, such as a rope grab, rip-stitch lanyard, a specially woven lanyard, tearing or deforming lanyard, automatic self-retracting lifeline/ lanyard, etc., which serves to dissipate a substantial amount of energy during a fall arrest.

Deceleration Distance: The additional vertical distance a falling employee travels excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Engineered Lifeline: A lifeline system that has been designed and approved by an engineer or qualified person.

Free Fall: The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free Fall Distance: The vertical displacement of the fall arrest attachment point on the employee's body harness between the onset of the fall and just before the system begins to apply force to arrest the fall. Free fall-distance must not exceed 6 feet. **This distance excludes deceleration distance and lifeline/lanyard elongation distance.**

Full Body Harness: Webbing/straps which are secured about an employee's body in a manner that will distribute the fall arrest forces over the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system, preferably at the shoulders and/or middle of the back.

Guardrail System: A barrier erected to prevent employees from falling to lower levels. This system includes a toe board, mid-rail and top rail able to withstand 200 pounds of force applied in any direction.

Lanyard: A flexible line of rope or strap that has self-locking snap hook connectors at each end for connecting to body harnesses, deceleration devices, and anchor points.

Leading Edge: The edge of a floor, roof, or other walking/working surface, which changes location as additional floor, roof, etc., is placed or constructed. A leading edge is considered an unprotected side or edge when not under active construction.

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 4:12 (vertical to horizontal). Approximately a roof with a 19.5-degree slope or less.

Personal Fall Arrest System: A system used to arrest (catch) an employee in a fall from a working level. It consists of an anchorage location, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or any combination of the before-mentioned items.

Qualified Person: An individual, who by possession of a recognized degree, certificate, or professional standing or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, work, or project.

Roof Work: The hoisting, storage, installation, repair, and removal of materials or equipment on the roof.

Rope Grab: A deceleration device, which travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee.

Safety Monitoring System: A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards. All other fall protection systems must be deemed "infeasible" (through infeasibility study/review) to select/use a safety monitoring system.

Snap hook: A connector comprised of a hook-shaped member with a closed keeper which may be opened to permit the hook to receive an object and when released, automatically closes to retain the object. Snap hooks must be self-closing with a self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection, thus preventing the opportunity for the object to "rollout" of the snap hook.

Steep Roof: A roof having a slope greater than 4:12 (vertical to horizontal). A roof with a slope greater than 19.5 degrees.

Toe board: A low protective barrier that will prevent the fall of materials and equipment to lower levels, usually 4 inches or greater in height.

Total Fall Distance: The maximum vertical change in distance from the bottom of an individual's feet at the onset of a fall; to the position of the feet after the fall is arrested. This includes the free fall distance and the deceleration distance.

Unprotected Sides and Edges: Any side or edge of a walking or working surface (e.g., floor, roof, ramp, runway, etc.) where there is no barrier at least 39 inches high.

Warning Line System: A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which work can be conducted without the use of guardrails, personal fall arrest systems, or safety nets to protect employees in the area. This will be utilized on any roof greater than 50" wide and in conjunction with a safety monitor only where the other forms of fall protection have been deemed infeasible to use.

TYPES OF FALL PROTECTION SYSTEMS

1. An articulating man lift provided with a restraint system and full body harness to an anchor point below the waist (preferably at the floor level).

2. Guardrail with a toe board.

3. Personal fall arrest systems.
   - Anchor points (rated at 5,000 pounds).
   - Full body harness.
   - Restraint line or lanyard.
   - Shock absorbing lanyard.
   - Retractable lanyard.
   - Rope grabs.
   - Connectors (self-locking snap hooks).

4. Engineered lifelines.

5. Warning lines.
6. Safety nets.
7. Safety monitor systems.

Appropriate fall protection will be determined by the task (job) to be performed.

FALL PROTECTION LOCATIONS

Fall protection is required wherever the potential to fall 6 feet or more exists. The following City of Portage locations have been identified for fall protection.

1. All flat and low sloped roof locations, when within 6 feet of the roof edge or during roof repair/ maintenance (4:12 pitch or less).
2. All exterior and interior equipment platforms, catwalks, antennas/ towers, etc.
3. All exterior and interior fixed ladders above 20 feet.
4. All mezzanine and balcony edges.
5. All open excavations or pits.
6. All tasks requiring use of the articulating man lifts.
7. All tasks requiring employees to lean outside the vertical rails of ladders (i.e.: painting, stairwell light bulb replacement, etc.).
8. Scaffolding erection - 10 feet in height or greater.
9. Mezzanine/catwalk areas - whenever an employee must step outside the catwalk, additional fall protection (i.e., 6-foot lanyard to full body harness, self-retracting lanyard or rope grab system) shall be used.

FALL PROTECTION GUIDELINES – OPTIONS

Engineering Controls

This should always be the first option for selection whenever possible (e.g., light bulb, changing, telescoping arm, changing valve, relocate at ground level, etc.) or utilizing a contractor in extremely hazardous areas.

Guardrails

On all projects, only guardrails made from steel, wood, and wire rope will be acceptable. All guardrail systems will comply with the current SPS 332/OSHA standards (i.e., contain a 42" high top rail, a mid-rail and toe board, which can withstand 200 pounds of force in any direction,). These guardrails will be placed in the following areas if necessary or feasible based on job location or requirements:

1. On all open sided floors.
2. On leading edges of roofs or mezzanines.

A barrier will be placed around all open excavation sites.

Personal Fall Protection Systems

All employees on any project that will be required to wear a personal fall arrest or restraint system will follow these guidelines:

1. A full body harness will be used at all times.
2. Only shock absorbing lanyards or retractable lanyards are to be used so as to keep impact forces at a minimum on the body (fall arrest systems).
3. Only nylon rope or nylon straps with locking snap hooks are to be used for restraints.
4. All lanyards will have self-locking snap hooks.
5. **All personal fall arrest systems will be inspected before each use by the employee**. Any deteriorated, bent, damaged, impacted, and/or harness showing excessive wear will be removed from service.

The maximum free fall distance is not to exceed 6 feet. Consideration must be given to the total fall distance. The following factors can affect total fall distance:

1. Length of connecting means (i.e., lanyard length, use of carabiners, snap hooks, etc.)
2. Position and height of anchorage relative to work platform/area (always keep above the head whenever possible).
3. Position of attachment and D-ring slide on the full body harness.
4. Deployment of shock absorber (max. 42").
5. Movement in the lifeline.
6. Initial position of worker before free fall occurs (i.e., sitting, standing, etc.).

Calculating Total Fall Distance

It is the total length of shock absorbing lanyard + height of the person + the location distance of the D-ring from the work surface or platform. Always allow a minimum of 6 feet of clearance above the ground, equipment, etc. at the end of the fall from the fall arrest point.

Engineered Lifeline

Lifeline systems must be designed and approved by an engineer or qualified person. Lifeline systems must be engineered to have appropriate anchorages, strength of line designed to hold "X" number of individuals connected to it, line strength to aid in the arrest of a fall, and durability to hold a fallen employee(s) suspended until a rescue can occur.

Warning Line System

All greater than 50 feet wide flat roof (i.e., roof with less than 4:12 slope) work which is performed 6 feet or further back from the edge of the roof can be completed by installing a Warning Line and using a safety monitor. If the roof is flat and less than 50 feet wide, a competent person safety monitor may be used. Warning Lines will consist of the following:

1. Will be erected 6 feet from the edge of the roof.
2. Be constructed of stationary posts made of wood or metal.
3. Wire or nylon rope and "Caution" tape will be strung from post to post and must be able to withstand 16 pounds of force.
4. The entire perimeter of the roof where work is being performed will be guarded by the warning line.

If an employee must access an area within 6 feet of the roof for reasons other than exiting the roof via a ladder or fixed industrial ladder, another employee must monitor that individual and warn him/her of any dangers. If another employee is not available to act as a safety monitor, then the employee must don a full body harness and attach a fall restraint lanyard to an anchor point to prevent reaching the edge of the roof.

INSPECTION OF FALL PROTECTION SYSTEMS

The following criteria will be utilized to maintain all equipment in good working condition:

Full Body Harnesses

1. Inspect before each use.
    a. Closely examine all of the nylon webbing to ensure there are no burn marks, which could weaken the material.
    b. Verify there are no torn, frayed, broken fibers, pulled stitches, or frayed edges anywhere on the harness.
    c. Examine D-ring for excessive wear, pits, deterioration or cracks.
    d. Verify that buckles are not deformed, cracked and will operate correctly.
    e. Check to see that all grommets (if present) are secure and not deformed from abuse or a fall.
    f. Harness should never have additional punched holes.
    g. All rivets should be tight, not deformed.
    h. Check tongue/straps for excessive wear from repeated buckling.
2. An annual inspection of all harnesses will be completed by a competent person; documentation will be maintained by the Department Supervisor.
3. Harnesses will be hung in a manner that protects them from damage.
4. All harnesses that are involved in a fall will be destroyed.

Lanyards/Shock Absorbing Lanyards

1. Inspect before each use.
    a. Check lanyard material for cuts, burns, abrasions, kinks, knots, broken stitches and excessive wear.
    b. Inspect the snap hooks for hook, locks, and eye distortion.
    c. Check carabiner for excessive wear, distortion, and lock operation.
    d. Ensure that all locking mechanisms seat and lock properly.
    e. Once locked, locking mechanism should prevent hook from opening.
    f. Visually inspect shock absorber for any signs of damage, paying close attention to where the shock absorber attaches to the lanyard.
    g. Verify that points where the lanyard attaches to the snap hooks are free of defects.
2. A competent person will complete an annual inspection of all lanyards and documentation will be maintained by the Department Supervisor.
3. Lanyards will be hung in a manner to protect them from damage.
4. All lanyards that are involved in a fall will be destroyed.

Snap hooks

1. Inspect before each use.
    a. Inspect snap hook for any hook and eye distortions.
    b. Verify there are no cracks, pitted surfaces, and eye distortions.
    c. The keeper latch should not be bent, distorted, or obstructed.
    d. Verify that the keeper latch seats into the nose without binding.
    e. Verify that the keeper spring securely closes the keeper latch.
    f. Test the locking mechanism to verify that the keeper latch locks properly.
2. A competent person will complete an annual inspection of all snap hooks and documentation will be maintained by the Department Supervisor.
3. All snap hooks involved in a fall will be destroyed.

Self-Retracting Lanyards/Lifelines

1. Inspect before each use.
    a. Visually inspect the body to ensure there is no physical damage to the body.
    b. Make sure all nuts and rivets are tight.
    c. Make sure the entire length of the nylon strap/wire rope is free from any cuts, burns, abrasions, kinks, knots, broken stitches/ strands, excessive wear and retracts freely.
    d. Test the unit by pulling sharply on the lanyard/lifeline to verify that the locking mechanism is operating correctly. If the manufacturer requires, make certain the retractable lanyard is returned to the manufacturer for scheduled annual inspections.
2. A competent person will conduct monthly inspection of all self-retracting lanyards/lifelines and documentation will be maintained.
3. Service per manufacturer specifications (1-2 years).
4. Inspect for proper function after every fall.

Tie-Off Adapters/Anchorages

1. Inspect for integrity and attachment to solid surface.
2. A competent person will complete an annual inspection of all tie-offs and anchorages and documentation will be maintained by the Department Supervisor.
3. All tie-offs and anchorages will be destroyed after a fall.

Articulating Man Lift

1. Inspect before each use.
2. Inspect/service per manufacturer guidelines. Forklift, scissors lifts, bucket truck and safety nets will be inspected at the beginning of each shift in use. Structural integrity of the forklift basket will be checked per the same schedule.
3. A competent person will complete an annual inspection of the forklift basket and documentation will be maintained by the Department Superintendent.

Horizontal Lifelines

1. Inspect before each use for structural integrity of line and anchors.
2. A competent person will complete an annual inspection.

Guardrails

1. Temporary systems - Daily visual inspection will be completed by a competent person.
2. Temporary systems - Weekly, a complete structural inspection will be completed by a competent person.
3. Permanent systems - Annual structural inspections will be completed by a competent person with future frequency of inspection defined based on conditions/controls present.

Storage and Maintenance of Fall Protection Equipment

1. Never store the personal fall arrest equipment in the bottom of a toolbox, on the ground, or outdoors exposed to the elements (i.e., sun, rain, snow, etc.!).
2. Hang equipment in a cool, dry location in a manner that retains its shape.
3. Always follow manufacturer recommendations for inspections.
4. Clean with a mild, nonabrasive soap and hang to dry.
5. Never force dry or use strong detergents in cleaning.
6. Never store equipment near excessive heat, chemicals, moisture, or sunlight.
7. Never store in an area with exposures to fumes or corrosive elements.
8. Avoid dirt or other types of build-up on equipment.
9. Never use this equipment for any purpose other than personal fall arrest.
10. Once exposed to a fall, remove equipment from service immediately.

Training - Document the attendance of all trainees.

All employees engaged in fall protection will be trained and have the knowledge to:

1. Recognize the fall hazards of/on their job sites.
2. Understand the hazards associated with working near fall hazards.
3. Work safely in hazardous areas by utilizing appropriate fall protection measures.
4. Understand and follow all components of this fall protection program.
5. Identify and understand the enforceable SPS 332/OSHA standards and ANSI standards that pertain to fall protection.

Enforcement

1. Violators of policy will be subject to discipline.
2. Documentation of any violations will be kept in the employee's personnel file that is retained by the City Clerk.

RESCUE PROCEDURES

Rescue Methods/Options of Fallen Personnel

In the unlikely event that a fall arrest occurs, all employees will be rescued by on-site personnel with the use of an articulating man lift or ladders where feasible. Alternate rescue would be through the local emergency services.

Communication Issues

In the event of a fall, the following people will be notified as soon as possible:

1. Trained Employees
2. Fire Department and emergency medical services if necessary
3. Department Supervisor

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At the beginning of any work activity where fall protection is an issue, rescue plans must be identified and discussed with all employees in case of a fall. The Department Supervisor will develop the rescue plan(s).

All employees involved in a fall arrest or fall will be sent immediately for a medical evaluation to determine the extent of injuries, if any.

Fall Investigation

All fall investigations will be conducted by the Department Supervisor, Department Head, and if necessary the Administrator.

The following documentation will be completed as part of the fall investigation:

1. Interviews with staff and witnesses.
2. Employee injury/accident report.
3. Supervisor injury/accident report.

Program Evaluation

This fall protection program will be evaluated periodically to determine the effectiveness. The following criteria will be used to evaluate its performance:

1. Accident reports
2. Number of accidents.
3. Management/staff compliance with program components.
4. Periodic on-site audits.
5. Staff feedback and interviews.

Contractors

All outside contractors working in or on the premises of the City of Portage will be required to follow the guidelines set forth in this fall protection program. Contractors in the pre-job meeting will be informed of these requirements as well as the on-site construction rules that apply.

Appendix 1

Full Body Harness

Annual Inspection Checklist

Harness Model/Name: _____
Serial Number: _____ Lot Number: _____
Date of Manufacture: _____ Date of Purchase: _____
Comments:
_____
_____
_____

General Factors	Accepted/Rejected	Supportive Details/Comments
1) **Hardware**: includes D-rings, buckles, keepers and back pads. Inspect for damage, distortion, sharp edges, burrs, cracks and corrosion.	Accepted Rejected	
2) **Webbing**: inspect for cuts, burns, tears, abrasions, frays, excessive soiling and discoloration.	Accepted Rejected	
3) **Stitching**: inspect for pulled or cut stitches.	Accepted Rejected	
4) **Labels**: inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
5) Other:	Accepted Rejected	
6) Other:	Accepted Rejected	
7) **Overall Disposition:**	Accepted Rejected	**Inspected By:** **Date Inspected:**

Appendix 2

Lanyards

Annual Inspection Checklist

Lanyard Model/Name: _____
Serial Number: _____ Lot Number: _____
Date of Manufacture: _____ Date of Purchase: _____
Comments:
_____
_____
_____

General Factors	Accepted/Rejected	Supportive Details/Comments
1) **Hardware**: includes D-rings, buckles, keepers and pads. Inspect for damage, distortion, sharp edges, burrs, cracks and corrosion.	Accepted Rejected	
2) **Webbing**: inspect for cuts, burns, tears, abrasions, frays, excessive soiling and discoloration.	Accepted Rejected	
3) **Stitching**: inspect for pulled or cut stitches.	Accepted Rejected	
4) **Synthetic Rope**: inspect for pulled or cut yarns, burns, abrasions, knots, excessive soiling and discoloration. .	Accepted Rejected	
5) **Energy Absorbing Component:** inspect for elongation, tears and excessive soiling.	Accepted Rejected	
6) **Labels:** inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
7) **Overall Disposition:**	Accepted Rejected	**Inspected By:** **Date Inspected:**

Appendix 3

Snap hooks/Carabiners

Annual Inspection Checklist

Hook/Carabiner Model/Name: _____
Serial Number: _____ Lot Number: _____
Date of Manufacture: _____ Date of Purchase: _____
Comments:
_____
_____
_____

General Factors	Accepted/Rejected	Supportive Details/Comments
1) **Physical Damage**: inspect for cracks, sharp edges, burrs, deformities and locking operations.	Accepted Rejected	
2) **Excessive Corrosion**: inspect for corrosion, which affects the operation and/or the strength.	Accepted Rejected	
3) **Markings**: inspect and make certain marking(s) are legible.	Accepted Rejected	
4) **Synthetic Rope**: inspect for pulled or cut yarns, burns, abrasions, knots, excessive soiling and discoloration. .	Accepted Rejected	
5) Other:	Accepted Rejected	
6) Other:	Accepted Rejected	
Overall Disposition:	Accepted Rejected	**Inspected By:** **Date Inspected:**

Appendix 4

Self-Retracting Lanyard/Lifeline

Annual Inspection Checklist

Self-Retracting Lanyard/Lifeline Model/Name: _____
Serial Number: _____ Lot Number: _____
Date of Manufacture: _____ Date of Purchase: _____
Comments:
_____
_____
_____

General Factors	Accepted/Rejected	Supportive Details/Comments
1) **Impact Indicator**: inspect indicator for activation (rupture of red stitching, elongated indicator, etc.)	Accepted Rejected	
2) **Screws/Fasteners**: inspect for damage and make certain all screws and fasteners are tight.	Accepted Rejected	
3) **Housing**: inspect for distortion, cracks and other damage. Inspect anchoring loop for distortion or damage.	Accepted Rejected	
4) **Lanyard/Lifeline**: inspect for cuts, burns, tears, abrasion, frays, excessive soiling and discoloration. (See impact indicator section.).	Accepted Rejected	
5) **Locking Action**: inspect for proper lock-up of brake mechanism.	Accepted Rejected	
6) **Retraction/Extension**: inspect spring tension by pulling lanyard out fully and allowing to retract fully (lifeline must be taut with no slack).	Accepted Rejected	
7) **Hooks/Carabiners**: inspect for physical damage, corrosion, proper orientation and markings.	Accepted Rejected	
8) **Labels**: inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
Overall Disposition:	Accepted Rejected	**Inspected By:** **Date Inspected:**