

CITY AND COUNTY OF DENVER

Fall Control / Protection Policy		
Occupational Safety and Health Management System No. 65.5.4 This policy was developed and shall be implemented under the authority of Executive Order No. 65 and the Risk Management Office.	January 1, 2008	Prepared / Revised By: Risk Management – Safety Unit

1.0 Introduction

This policy has been developed to establish minimum fall control practices for City and County employees who perform work in areas where they are exposed to heights of six feet or more and at lower heights where potentially hazardous conditions exist.

2.0 Scope

City and County employees and contractors who work in areas where they are exposed to heights of six feet or more and at lower heights where potentially hazardous conditions exist are required to comply with the fall protection measures outlined in this policy. Individual departments, agencies or contractors who have an existing fall control / protection program in place may continue to use that program if it provides the same degree of worker protection.

3.0 Definitions

ACCESS: Movement by physical or mechanical means to reach a workstation.

ACCESS ZONE: An area defined by a perimeter barrier (e.g. warning line system) erected on a roof to warn personnel that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail systems, personal fall arrest systems or safety net systems.

AERIAL LIFTS: Mechanical devices such as manlift, manbasket, scissor lifts and bucket trucks used for access to heights. The term "skipbox" is reserved for materials used only on construction sites.

ANCHORAGE: A secure point of attachment for lifelines, lanyards, or deceleration devices.

BODY BELT: A strap you can secure around your waist and attach a lanyard or device for fall arrest.

BOATSWAIN CHAIR: An adjustable suspension scaffold consisting of a solid seat or web sling designed to support one employee in a sitting position. A seat is desirable over a sling for suspended work longer than a few minutes.

BURST OUT: Failure of any snaphook subject to pressure on the gate mechanism by the anchorage point. This includes the unintentional disconnection of perched locking snaphooks from eyebolts.

CARABINER: Double locking ring used to connect system components.

CONNECTOR: A device used to couple (connect) parts of a system together. It may be an independent component, such as a carabiner, or an integral component, such as a buckle or D-ring sewn into a body harness or a snaphook spliced or sewn into a lanyard.

COMPETENT PERSON: A competent person is one qualified to observe and stop work if necessary and/or train in the following areas:

1. Nature of fall hazards in work areas;
2. Correct procedures for erecting, maintaining, disassembling and inspecting the fall arrest systems to be used;
3. Use and operation of guardrail systems, personal fall arrest systems, safety nets systems, warning line systems, designated access zones and other fall prevention techniques to be used;
4. Role of employees in fall control techniques;
5. Correct procedures for the handling and storage of equipment and materials and the erection of overhead protection; and
6. Applicable City and County documents and regulatory standards.

DECELERATION DISTANCE: The vertical distance between the belt or harness attachment point, at the activation of the fall arrest equipment, and that attachment point once the individual comes to a complete stop.

DIFFERENT LEVEL FALL: An accident where you fall below the level you were standing or walking on (e.g. you fall below foot level).

D-RING: An attachment point(s) on the belt or harness for a device or lanyard. (Sometimes erroneously named for a carabiner snap hook).

EXPOSED EDGE: An unprotected edge on walking or working surfaces, platforms, scaffolds or roofs. Not to be confused with leading edge (see leading edge definition below for distinction).

ELEVATED FALL HAZARD: Any access off the ground or any activity that involves or could involve an uncontrolled drop to a lower level.

FALL ARREST SYSTEM: Fall arrest is the process of bringing a person's free fall under control after the fall has started. Fall arrest devices or systems include full body harnesses, lanyards, retractable lifelines, horizontal or vertical lifelines, etc. connected to an anchorage point and approved by a qualified person. Fall arrest systems are designed and tested to function together for purposes of arresting a fall or minimize the potential for compounding injury. Criteria for fall

arrest systems assumed a maximum weight of 310 pounds (140 kg) per person including tools and equipment. *Note:* System capacities above 310 pounds up to a limit of 400 pounds (182 kg) including tool must be approved by a qualified person. Some manufacturers (e.g., Miller, Sellstrom/RTC) will make custom full-body harnesses and lanyards to accommodate larger individuals and provide certification of such.

FALL CONTROL: The elimination or control of a fall hazard through the use of a fall protection method and fall protection systems.

FALL PREVENTION: Any means or methods used to eliminate or prevent exposure to a fall. These include properly designed and installed guardrails used to protect floor edges, wall openings, roof openings, exposed edges, walkways, platforms and equipment. Adequate floor covers, skylight covers, and roof covers, scaffolding, and platforms with adequate guardrail systems and aerial lifts are examples of fall prevention systems.

FALL PROTECTION: A continuous system including anchorage, connecting means and body support. This system does not eliminate a fall hazard, but instead reduces the possibility of compound injury if a fall occurs. Also includes the use of safety nets designed and installed as a fall protection system.

FREE FALL DISTANCE: The vertical distance between the belt or harness attachment point (at the time of an unrestrained fall) and any obstruction of grade level or the activation of fall arrest equipment.

FULL BODY HARNESS: The design of single or multiple straps that can be secured around the body to which a lanyard or device can be attached. The design distributes the arresting forces over the buttocks, thighs, chest, and shoulders.

GATE: Snap hook closure that swings closed to secure the connection when pressure is released from the gate and is secured by a lock requiring two separate operations to open.

GENERAL ROOF PLAN: A procedure establishing control for access to and for construction, maintenance and other work activities on a roof. It specifies the provisions for a pre-job roof safety plan, leading edge roof work and when other appropriate procedures are established.

GUARDRAIL SYSTEM: An edge barrier erected to reasonably prevent employees from falling to lower levels.

HARDWARE: Snap hooks, D-rings, buckles, carabiner, adjuster, O-rings, etc., used to attach the components of a fall protection system together.

HOLE: A gap or void in a floor, roof or other walking/working surface measuring less than 12 inches but more than one inch and into which materials may fall to a lower level, but through which a person may not.

HORIZONTAL LIFELINE: A rail, rope, wire, or synthetic cable that is installed in a horizontal plane and used for attachment of a worker's lanyard or lifeline device while moving horizontally. Used to control dangerous pendulum-like swing falls. All horizontal lifelines must be approved before use by a qualified person.

IMPALEMENT HAZARD: Fall exposure to a sharp or blunt object with an area less than nine square inches on its top flat portion or which could reasonably cause penetration of a person in the vicinity of the hazard.

INDEPENDENT ANCHORAGE: A point of attachment that is not part of the working or walking surface or equipment rigging points. Anchorage points shall be independent of the work surface where possible.

INDEPENDENT LIFELINE: A component of a fall arrest system for moving on a vertical surface with a suspended scaffold or boatswain's chair. An independent lifeline is attached to a separate anchorage unless otherwise approved by a qualified person. A lifeline is tested with the rope grab to be used on that lifeline. One lifeline is to be used per person unless approved by a qualified person.

LANYARD: A flexible line of webbing, rope, or cable used to connect a full body harness to a lifeline or approved anchorage point. Lanyards are of two types: those with integral shock absorbers and those without.

LANYARD SHOCK ABSORBING: A connecting means of a fall arrest system designed to be attached between a harness and an anchorage. A flexible line of webbing, cable or rope that has an integral shock absorber used to connect a harness to a lifeline or anchorage point that extends during a fall arrest.

LEADING EDGE: The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as a deck) which changes location as additional floor, roof, decking or formwork are placed, formed or constructed and which poses an elevated fall hazard.

LIFELINE: A vertical line from a fixed anchorage, or between two horizontal anchorage, independent of walking or working surfaces, to which a lanyard or device is secured. Part of a fall protection system used as back-up safety for an elevated worker.

LIFELINE, HORIZONTAL: A rail, rope, wire, or synthetic cable that is installed in a horizontal plane and used for attachment of a worker's lanyard or lifeline device while moving horizontally. Used to control dangerous pendulum-like swing falls. All horizontal lifelines must be approved before use by a qualified person.

LIFELINE, RETRACTING: A fall arrestor whose spring-loaded integral line extends as a worker moves downward and automatically removes slack as the worker moves up towards the unit. The device can have a centrifugal locking mechanism or alternatively centrifugal braking mechanism for controlled descent (also called retracting lanyard).

OPENING, WALL, FLOOR OR ROOF: An opening of such dimensions through which a person can fall to a lower level. Such openings are 12 inches or more in dimension. All openings two inches or more must be protected.

QUALIFIED PERSON: A person with a recognized degree or professional certificate and extensive knowledge and experience in the area of fall control, and who is capable of designing, analyzing, evaluating and specifying fall prevention/fall protection systems.

ROLL OUT HAZARD: Unintentional disengagement of a snaphook caused by the gate being depressed under torque or contact with single-action snap hooks that do not have a locking gate keeper. Non-locking snaphooks are prohibited for any used by this document.

ROPE: Wire or synthetic rope used for lifelines.

ROPE GRAB: A fall arrest that is designed to move up and down a lifeline suspended from a fixed overhead anchorage point to which the belt or harness is attached. In the event of a fall, the rope grab locks onto the compatible rope through compression to arrest the fall.

SHOCK ABSORBER: A component of a fall protection system that dissipates energy by creating or extending the deceleration distance.

SNAPHOOK: A self-closing connecting device with a gatekeeper latch or similar arrangement that remains closed until manually released. Includes non-locking snaphooks that open when the gatekeeper is depressed and locking snaphooks that require a second action on a gatekeeper or lock before the gate can open. Only locking snaphooks are permitted.

SNAPHOOKS: A connecting snaphook that requires two separate forces to open the gate—one to deactivate the gatekeeper and a second to depress and open the gate that automatically closes when released. Used to minimize rollout or accidental disengagement.

SNAPHOOK, NON-LOCKING: A connecting snaphook that requires a single force to open the gate that automatically closes when released. This hook is prohibited by this document.

STANCHION: An upright bar, post or support for securing a horizontal lifeline, warning line or handrail in place. Generally used in fall control to refer to the supports for a warning line system or horizontal lifeline system.

SUSPENDED SCAFFOLD: A single point or multiple point work platform used for powered or un-powered access up or down the side of a structure. A boatswain's chair system is also a suspended scaffold.

SYNTHETIC FIBERS: A manufactured fiber such as nylon, polyester, or polypropylene.

TIE-OFF (SLANG FOR ANCHORAGE): The act of a worker securing the end of a lanyard to an anchorage point. The term tied off, and tying off, is related to anchorage. An anchorage point is sometimes referred to as a tie-off point.

UNPROTECTED SIDES AND EDGES: Any side or edge of a surface, except at entrances to points of access, where there is no wall or guardrail system.

WORK POSITIONING BELT: A body support with a D-ring on each side intended to support the actual weight of a person working hands-free. Where a fall potential exists, fall arrest equipment (i.e., a harness) shall be used in conjunction with the work-positioning belt.

4.0 Requirements

4.1. Responsibilities

4.1.1. Management / Supervision are responsible for the following:

- 1) Complying with this document and other applicable regulations;
- 2) Ensuring that a Fall Control Program is developed and implemented for their areas of responsibility; and
- 3) Assigning a Competent Person to oversee the Fall Control Program

4.1.2. Competent Person(s) are responsible for the following:

- 1) Compliance with the Fall Control Program
- 2) Recognizing fall hazards and foreseeable types of work or access that may lead to fall hazard exposures;
- 3) Conducting a fall survey to identify hazards (Attachment One);
- 4) Setting target dates and working with personnel responsible for completing corrective actions;
- 5) Evaluating the need for fall arrest equipment and fall prevention systems such as ledges, unprotected scaffolding, elevated walkways, platforms roof, etc;
- 6) Supplying and maintaining the proper equipment for the job;
- 7) Training personnel on the application, use and inspection of fall arrest equipment and fall prevention systems;
- 8) Conducting necessary follow-ups to insure that the application and use is correctly applied to the situation; and
- 9) Complying with all safe work practices.

4.1.3. Employees working at tasks requiring, or that may require, fall protection are responsible for:

- 1) Evaluating the need for fall arrest equipment and fall prevention systems such as ledges, unprotected scaffolding, elevated walkways, platforms roof, etc;
- 2) Considering the hazards that may be present;
- 3) Considering the use of temporary scaffolding, handrails, aerial lifts, etc;
- 4) Anticipating the unexpected and discussing possible hazards during a pre-job briefing;
- 5) Complying with all safety rules; and
- 6) Properly maintaining and inspecting fall arrest equipment and systems.

4.2. Training

Employees who may be exposed to fall hazards will be trained to recognize the hazard and the guidelines outlined in this policy. Training must be completed before beginning work on a project in which there is the potential for injury from falling. Training shall include the following:

- Nature of fall hazards in work areas;

- Correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems to be used;
- Use and operation of guardrail systems, personal fall arrest systems, safety nets systems, warning line systems, designated access zones and other fall prevention/protection techniques to be used;
- Role of employees in fall protection/fall prevention techniques;
- Correct procedures for the handling and storage of equipment and materials and the erection of overhead protection; and
- Applicable City and County documents and regulatory standards

4.3. Hierarchy of Controls

Management / Supervision will choose one, or a combination of, the following hazard control options. Preference will always be given to eliminating the hazard.

- 1) Fall hazard elimination
- 2) Fall prevention systems
- 3) Fall arrest systems - anchorage point, dee-rings, snaphooks and lanyards must be rated to at least 5000#
- 4) Standard guard rail – withstand the force of 200# applied within 2 inches of the top edge – top rail must be 43 inches plus or minus 3 inches above the working level

4.4. Fall Hazards and Controls

The following describes potential fall hazards and their associated work practices that shall be addressed in a department / agency fall control program (Attachment Two).

- 1) Fixed platforms, ladders and stairways – provide fixed platforms, ladders and stairways four feet or more in height with the appropriate guardrails, handrails, midrails, toe boards, etc.
- 2) Portable extension ladders – equip portable extension ladders with ropes, anchor ladders with tie-off lines at the top of the ladder and mandate that employees use both hands when climbing.
- 3) Suspended staging or scaffolding – use a fall arrest system when employees work on suspended staging or scaffolding.
- 4) Elevated equipment – use a fall arrest system if no fall prevention systems are in place.
- 5) Free-moving equipment – provide adequate stairs, ladders or other safe access to large vehicles. Fall protection/prevention methods must be employed when applicable.
- 6) Roofs – establish a roof fall control plan.
- 7) Aerial lifts – work performed from aerial lifts requires a fall arrest system.

4.5. Equipment Selection and Use

Management / Supervision may work with Risk Management to select and purchase fall protection systems and components that meet the capacity and performance requirements of the appropriate national standards.

4.6. Inspection and Testing

Prior to putting into service, the fall arrest equipment must be inspected and marked as required.

A method of tracking equipment inspections, markings and documentation shall be maintained by the departments / agencies.

Equipment must be visually inspected before each use and receive a documented inspection at least twice a year.

Equipment rejected for use shall be destroyed and the action recorded in the equipment records.

Weight testing is not permitted.

5.0 References

29 CFR 1910 Subpart D, 1910.23, 1910 Subpart F, 1910.66 and 1926.500

FALL HAZARD SURVEY

STEP ONE - Fall Hazard Analysis:

1. Identify the fall hazards in each work cell
2. Observe the individual tasks and look for:
 - tasks that require moving around pits
 - tasks that require moving at heights
 - location of valves, electrical switches or other equipment that require someone to work around a pit or at elevation
 - housekeeping
 - slip resistant surfaces/floor surfaces
 - steps and stairways
 - proper lighting
 - footwear that matches the job
 - proper operation of equipment and tools
 - use of contrasting colors

STEP TWO - Prioritize the Identified Hazards:

Enter the results on the Fall Hazard Status Form.

1. **Determine the exposure frequency using the following:**
2. **Assign a value of 1, 2, or 3 with 3 being the most frequent exposure**

- Frequent 3
- Occasional 2
- Unlikely 1

3. **Determine the severity level using the following:**

Severity Level	Description
• 8	Different level fall from 10 feet or greater
• 6	Different level fall from 4 feet to 10 feet
• 4	Different level fall from less than 4 feet
• 2	Same level fall

4. **Calculate risk level using the following:**

- Risk level = Exposure Frequency x Severity Level

5. **Determine ranking of risk level**

Risk level	Ranking	Description
• 16-24	1	Needs immediate attention
• 6-15	2	High priority - schedule for first solution
• 1-5	3	Schedule for solution

STEP THREE - Analyze the causes of the hazard

- Is something designed wrong or not working right, causing unnecessary fall hazard exposure?
- Is something being done because, “We have always done it that way?”
- Is the SOP being followed?
- Has the SOP been set up wrong?

- Has a valve, switch, etc. been installed in a poor location?
- Is the wrong tool being used for the job?
- Has there been a lack of pre-job planning? Poor planning?
- Is an upstream or downstream operation the root cause of your identified hazard?

STEP FOUR - Possible solutions

1. Education and training
2. Fall prevention using the following:
 - procedural changes
 - equipment or tool changes
 - physical changes or additions to the work area

STEP FIVE - Evaluate and select the solution

Considerations in selecting a solution:

- The simplest is usually the best
- Impact on other personnel (positive or negative)
- The time to implement (education/training and procedural changes may be the most effective, the quickest, and the least expensive solutions in terms of time and money. On the other hand, solutions that require mechanical or physical changes are often more costly and time intensive).
- Is the solution safe to implement?
- The solution shall be as worker friendly as possible

STEP SIX - Test the effectiveness of the solution

Verify that the selected solution has the desired impact.

STEP SEVEN - Implement the solution

- Write procedural changes to SOP and JSA
- Train everyone who will be affected
- For equipment or facilities changes, use the maintenance department

STEP EIGHT - Monitor/audit the solution

Evaluate the effect of the solution and implement:

- More education and training if needed
- If the solution is not working, rethink step three

FALL HAZARD ANALYSIS FORM

AREA: _____

DATE	HAZARD IDENTIFICATION AND DESCRIPTION	EXPOSURE	SEVERITY LEVEL	RISK LEVEL	SOLUTION (S)	PERSON RESPONSIBLE	COMPLETION DATE

Exposure - Frequent = 3
 Occasional = 2
 Unlikely = 1

Severity Level - Different level fall from 10 feet or greater = 8
 Different level fall from 4 feet to 10 feet = 6
 Different level fall from less than 4 feet = 4
 Same level fall = 2

Risk level - Exposure frequency x Severity level

Determine ranking of risk level

Risk level

Ranking

- | | | |
|-------|---|---|
| 16-24 | 1 | Needs immediate attention |
| 6-15 | 2 | High priority - schedule for first solution |
| 1-5 | 3 | Schedule for solution |

Sample Fall Protection Program

1.0 Scope

The City's Fall Prevention Program creates policies to be followed whenever an employee works at heights above six feet. These guidelines were established to provide a safe working environment, and to govern the use of fall protection measures and equipment. The written procedures outline uniform requirements designed to ensure that fall prevention training, operation, and practices are communicated to, and understood by, the affected employees (an affected employee is one that must work in or around areas where fall hazards are present). Therefore, only trained employees may work in areas where fall hazards are present.

2.0 Responsibilities

A. With assistance from Risk Management, the Department / Agency Safety Professional is responsible to:

1. Develop and maintain the written Fall Prevention Program. Re-evaluate this program periodically and base the need for changes upon suggestions by employees and their supervisors, accidents and near miss incidents that have been recorded, routine building safety inspections and changes in standards and technology.
2. Provide necessary training, which will primarily consist of elevated platform safety, scaffolding safety, ladder safety and personal fall arrest system safety for those affected employees.
3. Serve the role of technical support and consultation to departments of affected employees to interpret requirements and establish safe practices.

B. Department / Agency Supervisors are responsible to:

1. Recognize potential fall hazards based on this policy, notifying the Safety Professional of each fall hazard that their employees may face and to involve their affected employees in this program.
2. Notify the Department Safety Professional of the need for appropriate training, such as ladder safety, scaffolding safety and personal fall arrest system safety.
3. Evaluate, on an annual basis, the effectiveness of the program as it applies to the work that their affected employees perform and to provide the Department Safety Professional with their conclusions, compliance challenges and recommendations.
4. Contact the Department Safety Professional or Risk Management for technical support when questions arise regarding compliance and safe procedures.
5. Ensure that proper safety equipment is supplied to their affected employees where needed, such as fall arrest systems, scaffolding, proper ladders, guard railings, toe kicks, etc.
6. Ensure that their affected employees perform applicable pre-work check lists and inspections and to maintain the records of the completed check lists for at least one year.

7. Ensure that all work places are safe to perform the work that their affected employees are expected to conduct. To prevent slipping, tripping and falling, all locations where fall hazards are present must be kept clean, dry (where possible) and orderly. Where wet processes are used, drainage will be maintained and false floors, platforms, mats, or other dry standing places are provided where practicable.

C. Affected Employees are responsible to:

1. Follow the program requirements outlined in this policy and standard procedures required by their department for the work activities they are involved with.
2. Notify their supervisor when questions arise surrounding safe procedures, the need for fall prevention equipment, personal protective equipment and difficulties complying with requirements.
3. Attend any fall prevention training that is required of them.
4. Report all accidents and near misses that they witness or incur. This will help the department / agency to improve safe practices.
5. Perform checklist inspections outlined in this written program prior to conducting work activities.

3.0 Fall Hazards

There are a number of potential situations or conditions that can present a fall hazard. This program may not specifically address all possibilities. Therefore, when employees or supervisors recognize a condition that may present a fall hazard not specifically addressed by this written program they shall involve the Department / Agency Safety Professional prior to addressing the safety concerns surrounding the condition.

The following list of conditions addressed by this written program (note that this is not an all-inclusive list):

A. Ladders, both permanent and temporary (see Appendix A)

Ladders shall exhibit the following conditions:

1. Meet industry specifications for design and safety.
2. The appropriate type of ladder is being used for the job.
3. Metal ladders are not used near exposed electrical sources.
4. All parts, ropes, fittings and connections are secure and in good condition.
5. Non-slip surfaces are in place on ladder rungs.
6. Gripping safety feet are in place, secure and in sound condition.
7. Ladder has been set up safely:
 - a) Floor/ground surface is firm.
 - b) Floor/ground surface is flat.
 - c) Floor/ground surface is not slippery.
 - d) Ladder is level.
 - e) Top of ladder (unless using step ladder) is against a solid, fixed surface.

- f) For extension ladders, the 4-to-1 principal is accomplished (the base of the ladder shall be placed at a distance from the wall that is equal to one fourth of the height that the ladder is extended. i.e.; a ladder that is extended 20 ft high shall have its base approximately 5 ft from the wall).
- g) When employees are on extension ladders at heights of 20 feet or higher, either a second person is present to steady the ladders base or the top of the ladder is effectively tied off to a sound anchor point.

B. Stairs (permanent and temporary)

All stairs shall exhibit the following conditions:

1. Meet industry specifications for design and safety.
2. All required covers or guardrails are in place, including top rails, mid-rails and toe kicks or spindles.
3. All hand rails or guardrails are in place.
4. All treads and risers are in good repair.
5. Non-slip surfaces are in place.
6. Adequate headroom is maintained above.
7. Stairs are clear of clutter and slippery materials.

C. Elevated platforms that are fixed

All elevated platform locations shall exhibit the following conditions:

1. Top guard rail in place, is between 36 and 45 inches from floor, is in sound condition and anchored appropriately.
2. Vertical rails (spindles), a solid surface or a mid rail is in place, is in sound condition and is anchored appropriately.
3. If the railing is not solid down to the floor, a toe kick is present, in sound condition and anchored appropriately.
4. The flooring of the platform has no openings, is properly attached to sound surface and is in sound condition.
5. Walking surfaces are clear from obstruction and are not slippery.

D. Scaffolding

Once erected, scaffolding is an elevated platform and shall meet the same safety requirements. However, due to the complexity of parts and connections, and due to the fact that they are routinely assembled and disassembled, they are far more complex and are potentially more dangerous. Therefore, all employees who erect or use scaffolding shall be training in Scaffold Safety prior to working with or on scaffolding.

Note: See section 6.0 of this written program for specific requirements relating to scaffolding.

E. Floor and wall openings

All floor and wall openings that lead to a fall hazard shall exhibit the following conditions:

1. All floor and wall openings are safely covered or blocked from access.
2. If not safely covered or blocked from access, someone is assigned for constant attendance to it.
3. Covers shall be sound, solid and not easily opened.
4. Barricades that are designed to prevent someone from falling into the opening shall be visually noticeable, strong enough to hold the weight of multiple people and shall not, in themselves, have additional openings that create additional fall hazards. If the barricade is not solid from its top rail to the floor, they shall meet the requirements of a guardrail on an elevated platform (top rail, mid rail, toe board).
5. Floor surfaces surrounding the opening shall be clear of clutter or slippery material.

F. Working without a ladder or aerial platform lift at elevations greater than 6 feet in height.

Any time an employee works at elevations higher than 6 feet above the floor they shall use an appropriate ladder, an aerial platform lift, and scaffolding or assemble an appropriate elevated platform whenever feasible. If these are not feasible, the employee shall be trained in the proper use of fall arrest systems and don their arrest systems appropriately throughout the duration of time that they work above 6 feet (see section 5.0).

Some of the above conditions require the use of safety check lists prior to working with/on them. See Appendix A through D for approved checklists. If any of the conditions on the checklist are not met for the area or piece of equipment posing the potential fall hazard, then employees may not perform that work until the condition is safely met. If the condition cannot be remedied, a supervisor or Safety professional shall be notified of the problem. If the situation calls for the use of fall protection devices, such as harnesses, or positioning and restraining devices (such as belts) then the employee must don such protective equipment before beginning the work and use it as intended throughout the duration of the work. If the employee has not been trained in the safe use of fall arrest systems then he/she may not use the equipment until they have been trained in a Fall Arrest System program (see section 4.0).

4.0 Training Programs

When requested Risk Management will sponsor fall prevention related training programs for employees who require the need. The individual departments shall notify Risk Management of the need for training, which will include new hires and existing employees whose job has changed to require such training. All training records will be maintained by Risk Management.

The following training programs will be provided as needed:

- A. Scaffold Safety: For all employees who erect or use scaffolding.
- B. Fall Arrest System Safety: For all employees who use fall arrest systems.
- C. Ladder Safety training will take place periodically for departments who frequently use ladders.
- D. Note that aerial platform lift training, though not a part of this fall prevention written program, is also provided and mandated for all employees who operate or ride on aerial platform lifts.

5.0 Specific Requirement Regarding Personal Fall Arrest Systems

Different types of personal fall arrest systems are chosen depending on the nature of the work and the specific conditions present in the area where the work will take place.

A. Three basic types of personal fall arrest systems include:

1. Personal Fall Arrest system – A system used to stop a fall once it has begun. This system shall include an anchorage, full body harness, lanyard, locking snap hooks, lifeline and anchorage connector, and it may include a descent control device.
2. Positioning Device System – A system that prevents falls by supporting the employee in a working position. This system supports the employee, therefore, eliminating the chance for a fall to begin. These systems may include a body belt, harness, connector, locking snap hook and proper anchorage.
3. Personal Fall Protection Systems for Climbing Activities – A system that protects the employee while he/she is climbing. This system anchors at a point that usually adjusts and moves with the climber.

B. Equipment anchorage, tie off and use

Anchoring your fall arrest system is critical. The selection of the anchoring point shall be made carefully and when the employee is uncertain about the anchoring point he/she is expected to consult with a supervisor Safety Professional. Anchoring points must be permanent, fixed objects that are rated to hold forces several times the person's weight, including the weight of the equipment they will have with them.

There are other criteria necessary for an adequate anchorage point that shall be covered in training. When tying off, the employee shall tie off at such a location where there are no obstacles in the potential path of a fall and shall allow no more than 6 feet of free-falling distance (however, 2-4 ft of free falling distance is recommended). In addition to the free falling distance, the employee shall know and account for the additional deceleration distance of the fall arrest system they are using.

The employee shall complete the anchoring tie off and equipment tie off procedures that are specified by the fall arrest system manufacturer PRIOR to getting into a position where he/she could fall.

C. Body Belts and Harnesses

Only full-body harnesses that are approved by the Department / Agency Safety Professional or Risk Management shall be used. All equipment manufacturers' procedures shall be met. Harnesses can be attached either in the center of the back at shoulder level or above the head. The employee must use the following procedure to put their full-body harness on:

1. Inspect your full-body harness before putting it on (see part D of this section).
2. Hold the harness by the back D-ring and shake the straps into place.
3. Release buckled straps and slip them over your shoulders with the D-ring in back.
4. Pull the leg strap between your legs and connect it to the opposite end.

5. Waist strap should be tight but not binding.
6. Connect chest strap and position it in the middle of your chest.
7. Check that the harness is snug but allows full movement.

D. Equipment Care and Inspection

Keeping equipment in good working order is essential. Follow manufacturer's instructions and training protocols for equipment maintenance, cleaning and storage. Employees shall follow the "Personal Fall Arrest System Check List" in Appendix B of this written program prior to each use of their personal fall arrest system. Equipment that has been subject to a fall must be inspected before it is re-used.

Note that some personal fall arrest systems need to be discarded after a single fall occurs. Any defective equipment must be identified and replaced at once.

E. Rescue after a Fall

In the event that a person falls and their fall arrest system engages, call 911. The Denver Fire Department will organize a rescue effort quickly.

6.0 **Specific Requirement Regarding Scaffolding**

Scaffolds are complex systems with multiple connection points and are subject to a number of factors that could affect their stability and reliability. Therefore, only a competent person (one who has received training) may erect and disassemble scaffolding, perform a scaffold equipment inspection (see Appendix C) and perform a scaffold workplace inspection (see Appendix D).

A. Basic requirements for the safe use of standard scaffold systems

1. The working edge of the scaffold shall be no more than 14 inches from the front of the building or structure without additional pre-cautions (supervision and the Safety Professional must approve if you need more than 14 inches).
2. Platforms shall extend over the end supports by at least 6 inches and not more than 12 inches unless cleated or restrained by hooks, nails or nine gauge wire.
3. All parts that are supplied by the manufacturer are to be used unless they are parts specifically designed for optional uses which are not being used during the project.
4. All parts, including casters, pipes/poles, rails, toe boards, platforms, cams, locking pins and all connection devices must be inspected and found to be in good condition prior to each use (See Appendix C).
5. A work place inspection shall be conducted prior to and during the erection of the scaffolding (See Appendix D).
6. Guardrails shall be placed between 36 and 45 inches high and placed at the open ends and sides of the platform and must be able to withstand a force of 200 pounds. Mid rails are needed between the top rail and the toe board. Toe boards shall also be in place.
7. Cross bracing and railing shall not be used as a means of climbing to and accessing the platform. Use only installed ladders.
8. Caster wheels shall be locked and all locking pins shall be in place prior to using scaffolding.

9. Fall protection systems are required, when feasible, while employees erect and disassemble scaffolding.
10. Hard hats shall be worn when working on or around scaffolding (see supervision and the Safety Professional regarding exceptions to this requirement).
11. The area below and around erected scaffolding shall have a barricade.
12. If planning to use a suspended scaffolding system, consult with supervision and the Department Safety Professional first.

Appendix A

Workplace Inspection for Ladders

The condition of the ladder shall be inspected prior to each job that the ladder is used for. The workplace shall be inspected at each new location where a ladder is to be used. These are guidelines; therefore documentation is not a requirement.

Ladder Condition:

- This is the proper ladder for the job
- No cracks in rungs or sides of ladder
- No loose rungs
- Connection hardware is in good condition
- No broken locks or pulleys
- No damage to ladder feet/base
- No frayed or worn ropes
- Frame is not bent, warped or uneven

Ladder Set Up:

Extension Ladders

- Firm Ground
- Firm/proper top resting point
- Top ladder extends 4 rungs above resting point if accessing roof
- Level ladder legs
- No electrical hazards
- No horizontal forces
- Rung locking devices secure
- Area cordoned off (if necessary)
- If 20 ft high, secure top of ladder or have a 2nd person to stabilize
- No additional hazards

Step Ladders

- Firm Ground
- Reaches proper height
- No electrical hazards
- No horizontal forces
- Area cordoned off (if necessary)
- No additional hazards

Appendix B Scaffolding Equipment Inspection (Mandatory)

(For tube and coupler scaffolding, rolling towers and stationary towers)

- Frame posts in good condition
- Runner poles in good condition
- Bearer poles in good condition
- Cross bracing poles in good condition
- Horizontal poles in good condition
- Panel guard rails in good condition
 - Top rail
 - Mid rail
 - Uprights
 - Toe kicks
- Connector Clamps
- Locking pins
- Base plates
- Casters with locking equipment
- Climbing Ladders
- Climbing ladder brackets
- Outrigger brackets (if applicable)
- Planking (solid treated lumber, LVL, Metal...)
- Additional components
 -
 -
 -
- Additional accessories added
 -
 -
 -

Comments: _____

Department: _____

Inspector's Name: _____

Sign Name: _____

Date/Time: _____

Appendix C

Scaffolding Workplace Inspection (Mandatory)

Date of work and inspection: _____

Department doing the work: _____

Name of inspector: _____

- Is scaffold equipment inspection complete?
- No electrical within 10' (or insulation if <300 V)
- No overhead obstruction
- Scaffold grounded if power equipment is used
- Only trained personnel erecting or using scaffolding
- Ground or floor is providing adequate support
- Ground or floor flat and level or adjustments have been made
- Area around base is cordoned off
- If casters are used, they are locked
- Base plates are in place and secured
- Each frame and panel is braced by
 - Horizontal bracing, or
 - Cross bracing, or
 - Diagonal bracing
- Diagonal and cross bracing is used near bottom and every 20 ft
- All bracing connections and couplers are secured
- All vertical post connections and couplers are secured
- All locking pins and locking mechanisms are in place and engaged
- All posts are plumb and planking is level
- All planking overhangs the ends by 6-12"
- All 4:1 sections (when height exceeds 4 times its width) properly secure
 - Tied to wall or fixed surface, or
 - Guyed, or
 - Outriggers used, or
 - Other effective restraints used
- A means of access to all platforms is provided (ie; ladder)
- No climbing of cross bracing, horizontal or diagonal parts is necessary
- No homemade or make shift devices used
- No additional ladders or devices used to gain height on platforms
- Erected scaffolding reaches safe working height
- Weight capacity of the scaffold system will not be exceeded

Notes/Comments: _____

Inspection _____

Signature Date:

Appendix D

Fall Arrest System Checklist

The following checklist shall be completed prior to conducting work using a fall arrest system. This is a guideline checklist that is required, however documentation is not mandatory. In addition to these items, be sure to inspect any other items that the fall arrest system's manufacturer recommends.

- Check all equipment for:
 - Wear
 - Damage
 - Mold
 - Distortion
 - Cuts
 - Scrapes

- Check all hardware for:
 - Cracks
 - Sharp edges
 - Burrs
 - Worn or bent parts

- Do snap hooks close and lock tightly?
- Do buckles work properly?
- Check ropes for worn or broken fibers, pulled stitches and discoloration
- Make sure lifeline anchors and mountings are not loose or damaged
- Check additional manufacturer's recommendations
 -
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 -
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