

CITY POLICY

SECTION: HUMAN RESOURCES

NO: HR – HS - 52

REFERENCE: HEALTH AND SAFETY

Date:
Dec 5, 2017
Next Review Date:
December 2019

TITLE: FALL PREVENTION AND PROTECTION

1.0 PURPOSE

- 1.1 To provide a safe working environment for its employees. In doing so, the City will take all reasonable and practical measures to eliminate or minimize the injury or risks associated with working from heights.
- 1.2 This policy was developed and designed to meet the following objectives:
 - (a) To provide workers with the knowledge to safely work from heights and prevent falls;
 - (b) Establish guidelines and safe operating procedures while working from heights; and
 - (c) To comply with the responsibilities under the *Occupational Health and Safety Act and Regulations*.

2.0 GENERAL REQUIREMENTS

- 2.1 Whenever a worker is exposed to one of the following hazards, some form of fall protection must be used:
 - (a) Falling more than 3 meters (10 feet);
 - (b) Falling more than 1.2 meters (4 feet) if the work area is used as a path for a wheelbarrow or similar equipment;
 - (c) Falling into operating equipment;
 - (d) Falling into water or another liquid;
 - (e) Falling into a hazardous substance or object; and
 - (f) Falling through an opening in a work area.

The type of protection to be used must be determined during the initial hazard analysis of the worksite, and must be used at all times until the task has been completed.

- 2.2 In addition to the above requirements, guardrails must be installed if a worker is exposed to a fall of 2.4 meters (8 feet) or more from any of the following work surfaces:
- (a) A floor, including the floor of a mezzanine or balcony;
 - (b) The surface of a bridge;
 - (c) A roof while formwork is in place; and
 - (d) A scaffold platform or other work platform, runway or ramp.

Fall protection is accomplished by successfully establishing fall prevention guidelines and the use of a fall arrest system when necessary.

3.0 TRAINING

- 3.1 Prior to working from heights in excess of 3 meters (10 feet), employees must be trained in fall prevention and protection. No worker shall perform work where the risk of a fall hazard exists until they have been trained in fall protection.

4.0 PROCEDURE

NOTE: The Fall Protection/Prevention Form (Appendix A) must be completed prior to working where a fall hazard exists; heights in excess of 3 meters (10 feet).

4.1 Ladders:

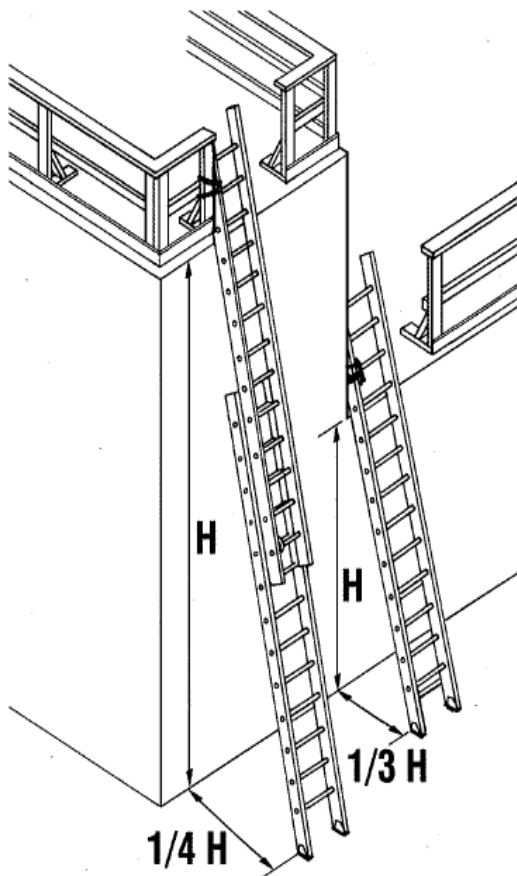
When using a ladder, a worker must use the following procedures:

- (a) Inspect the ladder prior to use, look for defects or missing items (e.g. dents, cracks, missing shoes – see checklist following). When a ladder is found to be defective it must be tagged and immediately placed out of service;
- (b) Ensure the ladder is tied off, held or otherwise secured before being used;
- (c) Attempt to avoid use of ladders in slippery areas such as rain, snow or ice. Such substances on the rungs or at the base of the ladder may cause the worker to lose footing;
- (d) Maintain three-point contact at all times when using the ladder (one hand and two feet, or two hands and one foot);
- (e) Avoid reaching too far to one side, the user must maintain their center of gravity between the side rails of the ladder;
- (f) Always face the ladder when climbing up or down the ladder;
- (g) Ensure ladders are set up on a firm, stable, footing;

- (h) Ensure the ladder angle is at the correct degree. The ladder's base should be placed 1 meter out for every 3 meters up (see following diagram); and,
- (i) Ensure the areas at the base and the top of the ladder are clear of obstructions, slippery substances and other hazards.

In addition, when any ladder must be set up next to an unprotected edge where a fall of 3 meters (10 feet) or more could occur, workers using the ladder must be protected by a fall-arrest system.

Proper Ladder Angles



Ladder Inspection checklist

- ☐ Ensure ladder is CSA certified prior to use. Ladders not bearing the CSA certification label should not be used
- ☐ Side rails are not twisted, cracked, dented, or otherwise damaged
- ☐ Rungs are straight and free of cracks, significant wear, and distortion
- ☐ Shoes on the side rails are intact and operating as originally manufactured
- ☐ Wooden ladders are free of paint or other opaque coatings that may conceal defects such as cracks
- ☐ Ensure no slipshod repairs or makeshift replacements are present
- ☐ Check all moving parts are in good working order, i.e. portable ladders extend freely, and locking mechanisms are functioning; ensure locking mechanism on step ladders is functioning correctly
- ☐ Damage or defective ladders are tagged and immediately removed from service

4.2 Working with Powered Elevated Work Platforms:

Workers must be trained to operate the specific class of Powered Elevated Work Platform (PEWP) prior to use. See Departmental Standard Procedures.

Fall protection for PEWPs include the following minimum requirement:

- (a) The PEWP must be equipped with guardrails;
- (b) The PEWP must not be moved with the worker(s) aboard unless each worker wears a full body harness which is adequately tied off to the platform;
- (c) Employees should identify all approved tie-off points on the platform prior to use as per the manufacturer's operating manual;
- (d) Workers must never climb up on the guardrails or reach out to a point where their center of gravity is outside of the protection provided by the guardrails; and
- (e) Fall-arrest system must be used if the worker is exposed to the hazard of falling due to the conditions of the work environment.

4.3 Protection for Floor Openings:

Openings in floors, roof and other work surfaces must be protected by guardrails or covers if the opening creates a fall hazard. A guardrail is the preferred method of fall protection around openings, however if guardrails are not practical, a securely fastened cover over the opening can be used.

Protective covers must:

- (a) Completely cover the opening;
- (b) Be securely fastened to the ground around the opening;
- (c) Be made of material adequate to support all the expected loads; and
- (d) Be able to support a live load of at least 50 pounds per square foot without exceeding the allowable unit stress for the material used.

4.4 Guardrails:

Where the risk of falling more than 3 meters (10 feet) exists, a worker must be protected. In most cases guardrails are the most reliable and convenient means of fall protection available. If a worker has access to any of the following work surfaces, and is exposed to a fall of 2.4 meters (8 feet) or more, a regulated guardrail system must be used:

- (a) A floor, including the floor of a mezzanine or balcony;
- (b) The surface of a bridge;
- (c) A roof while formwork is in place; and
- (d) A scaffold platform or other work platform, runway or ramp.

4.4.1 General Regulated Guardrail Requirements

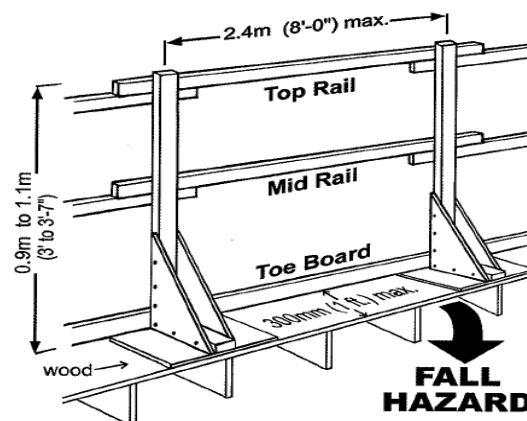
Guardrails must be installed no farther than 300 mm from an edge. In addition, a guardrail must be capable of resisting the following loads anywhere along its length:

- (a) A point load of 675 newtons (150 pounds) applied laterally to the top rail;
- (b) A point load of 450 newtons (100 pounds) applied in a vertical downward direction to the top rail;
- (c) A point load of 450 newtons (100 pounds) applied in a lateral or vertical downward direction to the mid-rail; and
- (d) A point load of 225 newtons (50 pounds) applied laterally to the toe board.

4.4.2 General Regulated Guardrail Requirements for Wood Guardrails:

Basic requirement for wood guardrails include:

- (a) Top rail, mid-rail and toe board secured to vertical supports;
- (b) Top rail between 0.9 meters (3 feet) and 1.1 meters (3 feet, 7 inches) high; and
- (c) Posts no more than 2.4 meters (8 feet) apart.
- (d) To strengthen guardrails, reduce the spacing of posts and double the thickness of the top rail. Post must be firmly fastened to support surfaces.
- (e) Workers must ensure that posts, support surfaces and the methods of attachment are adequate and secure.



4.5 Travel Restraint System:

Travel restraint systems are designed to allow the worker to travel just far enough to reach the edge of the work space but not far enough to fall over. Where work must be done within 2 meters (6 feet) of an open, unprotected edge that presents a fall hazard, a travel restraint system must be used.

The basic travel restraint system consists of:

- (a) CSA approved full body harness;
- (b) Lanyard;
- (c) Lifeline;
- (d) Rope grab to attach harness or lanyard to lifeline; and
- (e) Anchorage capable of supporting a static load of 2 kilonewtons (450 pounds) with a recommended safety factor of at least 2, or 4 kilonewtons (900 pounds).

4.6 Fall Arrest System:

If a worker cannot be protected from falls by guardrails or a travel restraint system, they must be protected by a fall arrest system. In the event of a fall, this system must ensure a worker does not hit the ground, the next level, or any other object below.

4.6.1 A fall arrest system must include (also see following drawing):

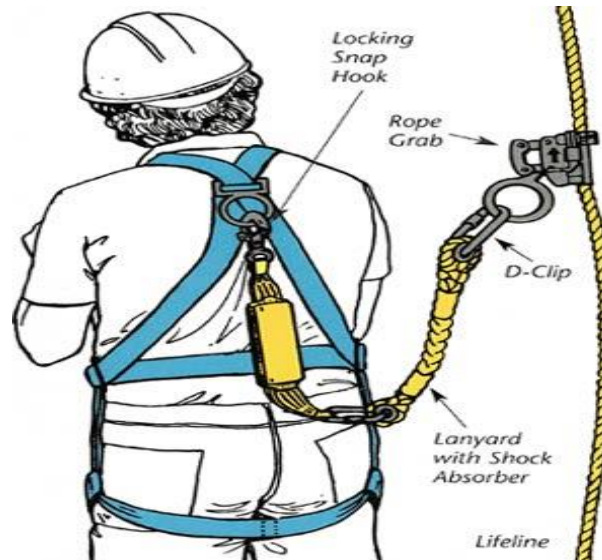
- (a) CSA approved full body harness with back mounted "D" ring;
- (b) A lanyard equipped with a shock absorber (unless the shock absorber could cause the worker to hit the ground or any other object);
- (c) The worker must be attached to a lifeline or by the lanyard to an adequate fixed support;
- (d) Must prevent a falling worker from hitting the ground or any other object; and
- (e) Must not subject a falling worker to a peak fall arrest force greater than 8 kilonewtons (1800 pounds).

4.6.2 All components of a fall protection system must meet the applicable CSA standards. When using fall arrest equipment, look for the following CSA standard numbers attached to or etched on components:

- (a) Harness – CSA Z259.10
- (b) Safety Belt – CSA Z259.1
- (c) Lanyards – CSA Z259.1
- (d) Shock Absorbers – CAN/CSA Z259.11
- (e) Self-retracting devices – CAN/CSA Z259.2.2
- (f) Descent Control Devices – CAN/CSA Z259.2.3
- (g) Fall Arresters (rope grabs) – CAN/CSA Z 259.2.1
- (h) Vertical Lifelines – CSA Z259.2.1

If the equipment is not marked, ask the manufacturer for written confirmation/evidence that it meets CSA standards.

Warning: Do not use any fall protection equipment not labelled or etched with the CSA standard noted above.



All fall arrest components deemed defective must be tagged and placed out of service immediately. Workers are forbidden to use unsafe equipment.

4.7 Fall Arrest Planning:

Before deciding on a fall arrest system, the worker and supervisor must assess the hazards a worker may be exposed to in case of a fall. While planning, the following concerns must be taken into account, and all must be addressed:

- (a) Will the worker "bottom out" (employee hits the ground or any other object prior to arrest)?
- (b) Has the total fall distance been taken into account to prevent bottoming out? Total fall distance consists of:
 - (i) Free fall distance – should be kept to 1.5 meters (5 feet) or less; and
 - (ii) Fall stopping distance – which includes stretch in the lanyard (minimal), slack in the harness (maximum 30 cm or 1 foot due to allowable adjustments for user's comfort)
- (c) Will the "pendulum effect" cause the worker to swing from side-to-side possibly striking a structure or any other object?

4.8 Emergency Rescue:

A rescue plan must be developed in advance of work that involves a fall hazard to ensure victims of a fall are rescued promptly. Possibilities for rescue include self-rescue, rescue by co-workers, and rescue by a professional rescue team. In many cases, the rescue plan can be simple, a ladder or an elevating work platform can be used to reach the worker. Workers can also be hauled back up to the level from which they fell using a pulley system, or can be pulled in through a nearby window or other opening. In any case, the rescue procedure must be documented and be discussed among all workers involved prior to work, (see appendix A).

4.9 Ten Essential Principals for Users of Fall Arrest Systems:

1. Inspect your equipment before every use (see appendix A).
Note: All components of the fall arrest system must be inspected annually by a certified technician. Approved equipment will have a tag identifying its safe use. If there is no annual inspection tag on the equipment do not use it until inspected and approved.
2. Wear and adjust your harness properly.
3. Use your shock absorber whenever possible.
4. Connect all components of your fall arrest system using only compatible connecting hardware that meets CSA standards.
5. Only attach your fall arrest system to a suitable anchorage.
6. Keep your fall distance to a minimum.
7. Consider the conditions of your workplace when choosing your equipment.
8. Care for your equipment as you would care for yourself.
9. Know the rescue procedure and equipment in case you should fall.
10. Be properly trained to use any fall protection equipment.

5.0 RESPONSIBILITIES

5.1 Managers and Supervisors:

- (a) Communicate this policy and its procedures to all employees who work where the potential for elevated work exists;
- (b) Provide proper training and education about the hazards of working from heights;

- (c) Conduct a hazard assessment to identify potential hazards related to the nature of the work or the work environment given the circumstances of the work when working from heights;
- (d) Conduct further hazard assessments at intervals of time appropriate to the changing conditions or circumstances of the workers job (e.g., changes in the work organization, physical environment, or equipment and tools);
- (e) Advise workers of the existence of any potential or actual danger to the health and safety of the worker in which the supervisor is aware;
- (f) Ensure workers are provided with, and use all personal protective equipment (PPE) required for the job; and
- (g) Ensure that all workers are trained in fall protection, and are familiar with this procedure prior to conducting work from heights.

5.2 Workers:

- (a) No employee is to work from a height more than 3 meters (10 feet) without training on fall prevention and protection training;
- (b) All employees must adhere to the safety methods outlined in this procedure;
- (c) Employees must participate in the working from heights hazard evaluation and risk management decisions with the supervisor;
- (d) Employees must ensure all PPE and protective devices are used and are in good working order;
- (e) Will inspect any fall arrest system, and sign off on required documentation prior to working from heights (see appendix A); and
- (f) Maintain a safe work environment and take every reasonable precaution when working from heights.

5.3 Joint Health and Safety Committee:

- (a) Review the hazard assessment results and provide recommendations to management to reduce and minimize the injury or incident risks;
- (b) Participate in investigations and recommend corrective actions; and
- (c) Respond to employee concerns related to working from heights and communicate these concerns to management.

History			
Approval Date:	December 19, 2011	Approved by:	By-law 3930-2011
Review/Amendment Date:	Dec 5, 2017	Approved by:	CAO
Review/Amendment Date:		Approved by:	
Review/Amendment Date:		Approved by:	
Review/Amendment Date:		Approved by:	
Review/Amendment Date:		Approved by:	

APPENDIX A



Fall Protection/Prevention Form

Date of Work

(DD/MM/YYYY)

SECTION I – Required Information

Building Location (include address):

Department:

Employees conducting work: (list)

Approximate height of work:

SECTION II – Description of work involved:**SECTION III – Safety precautions to be used: (please describe)****SECTION IV – Checklists****General Checklist**

Y N N/A

Will a ladder be used?

☐ ☐ ☐

Has the ladder been inspected?

☐ ☐ ☐

Will a guard rail be used?

☐ ☐ ☐

Does the guardrail meet all applicable requirements?

☐ ☐ ☐Will a travel restraint system be used?
(If yes, all employees must complete fall arrest checklist on page 2)☐ ☐ ☐Will a fall arrest system be used?
(If yes, all employees must complete fall arrest checklist on page 2)☐ ☐ ☐**Supervisors Fall Arrest Checklist**

(only completed if FAS are used by employees)

Has the fall arrest plan been discussed with employees?

☐

Have proper anchor locations been identified and shown to workers?

☐

Are certified employees performing work requiring fall arrest equipment?

☐

Has page 2 been completed by all workers involved?

☐

Has fall arrest emergency plan been discussed with workers?

☐

All must be checked

SECTION V – Emergency Rescue Plan**Describe emergency rescue plan:** (ensure plan is discussed with workers prior to work)**SECTION VI – Sign off**

Supervisor Name:

Supervisors Signature:

Worker Representative:

Date:



Fall Protection/Prevention Form

Date of Work

(DD/MM/YYYY)

Protection

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FALL ARREST CHECKLIST

All employees who will be using a fall arrest system must complete and signoff on the following checklist prior to completing any work. Employees cannot use a fall arrest system without proper certification.

Employee #1 Name: (Please Print)

	Y	N	N/A		Y	N
Are all the components of the FAS free from defects?	☐	☐	☐	Is the harness still valid? (e.g. not expired)	☐	☐
Are the following CSA standards found on the applicable equipment:				Have you discussed the fall arrest plan with your supervisor?	☐	☐
(a) Harness – CSA Z259.10	☐	☐	☐	Have you been instructed on the locations of all anchor points?	☐	☐
(b) Safety Belt – CSA Z259.1	☐	☐	☐	Has emergency rescue plan been communicated to you?	☐	☐
(c) Lanyards – CSA Z259.1	☐	☐	☐	Have you received fall protection training?	☐	☐
(d) Shock Absorbers – CAN/CSA Z259.11	☐	☐	☐			
(e) Self-retracting devices – CAN/CSA Z259.2.2	☐	☐	☐	Other comments:		
(f) Descent Control Devices – CAN/CSA Z259.2.3	☐	☐	☐			
(g) Fall Arresters (rope grabs) – CAN/CSA Z 259.2.1	☐	☐	☐			
(h) Vertical Lifelines – CSA Z259.2.1	☐	☐	☐			
If you answered "N" to any of the above questions the component must be tagged and removed from service.				Signature:	Date:	

Employee #2 Name: (Please Print)

	Y	N	N/A		Y	N
Are all the components of the FAS free from defects?	☐	☐	☐	Is the harness still valid? (e.g. not expired)	☐	☐
Are the following CSA standards found on the applicable equipment:				Have you discussed the fall arrest plan with your supervisor?	☐	☐
(a) Harness – CSA Z259.10	☐	☐	☐	Have you been instructed on the locations of all anchor points?	☐	☐
(b) Safety Belt – CSA Z259.1	☐	☐	☐	Has emergency rescue plan been communicated to you?	☐	☐
(c) Lanyards – CSA Z259.1	☐	☐	☐	Have you received fall protection training?	☐	☐
(d) Shock Absorbers – CAN/CSA Z259.11	☐	☐	☐			
(e) Self-retracting devices – CAN/CSA Z259.2.2	☐	☐	☐	Other comments:		
(f) Descent Control Devices – CAN/CSA Z259.2.3	☐	☐	☐			
(g) Fall Arresters (rope grabs) – CAN/CSA Z259.2.1	☐	☐	☐			
(h) Vertical Lifelines – CSA Z259.2.1	☐	☐	☐			
If you answered "N" to any of the above questions the component must be tagged and removed from service.				Signature:	Date:	

Please photocopy page if more than 2 employees are completing the task.**Return form to Supervisor when completed.**