

1.0 INTRODUCTION

When exposed to the risk of falling, a fall-protection system may be all that keeps you from being seriously injured. There are many circumstances where fall-protection may be required; this standard provides a summary of when fall-protection is required and what needs to be in place.

2.0 SCOPE

Employees or contractors are required to use fall protection when working at 3 m or more, when working above any surface that could injure an employee during a fall (working above a surface that has rebar could result in impalement and serious injury even if the fall is less than 3 m) or when working above an open top tank, bin, hopper or vat.

Fall protection is also required for employees who work from:

- forklift platforms,
- elevating work platforms,
- fixed suspended work platforms,
- swing staging,
- boatswain's chairs,
- suspended equipment,
- personnel carrying equipment.

3.0 REFERENCES

NB Occupational Health and Safety,	General Regulation 91-191
Fall Protection Code of Practice	Form #0441
CSA Standard Z259.1-05,	“Body Belts and Saddles for Work Positioning and Travel Restraint”
Z259.1-95,	“Safety Belts and Lanyards”
CSA Standard Z259.2.1-98,	“Fall-arresters, Vertical life lines, and Rails” or
Z259.2-M1979,	“Fall-arresting Devices, Personnel Lowering Devices and Life Lines”,
CSA Standard Z259.2.2-98,	“Self-Retracting Devices for Personal Fall-Arrest Systems”
CSA Standard Z259.2.3-99,	“Descent Control Devices”
CSA Standard Z259.10-06,	“Full Body Harnesses”
CSA Standard Z259.11-17,	“Energy Absorbers and Lanyards” or Z259.11-M92, “Shock Absorbers for Personal Fall-Arrest Systems”
CSA Standard Z259.12-01,	“Connecting Components for Personal Fall-Arrest Systems”
CSA Standard Z259.14-01,	“Fall Restricting Equipment for Wood Pole Climbing”
CSA Standard Z259.13-04,	“Flexible Horizontal Life Line Systems”
CSA Standard Z259.16-04,	“Design of Active Fall-Protection Systems”.

4.0 TERMS AND DEFINITIONS

Aerial Device	any vehicle-mounted telescoping or articulating device that is used to position a person by means of a bucket, basket, ladder or platform directly secured to the boom;
Anchor Point	the part of a permanent or temporary structure or of a component attached to such a structure to which fall protection components or suspended equipment components are connected.
Energy Absorber	a component of a fall arresting system that dissipates kinetic energy by creating or extending the deceleration distance.
Fall Arresting System	a permanent or temporary assembly of fall protection components designed to arrest the fall of one or more employees.
Fall Protection System	a guardrail, a travel restraint system, a fall arresting system, and/or a fall restricting system, that is either a personal fall restricting system or a collective fall restricting system designed to: <ul style="list-style-type: none"> (a) prevent or eliminate the risk of falling, (b) restrain an employee who is at risk of falling, or (c) stop an employee who has fallen.
Fall Restricting System	a combination of a work positioning system and fall restricting equipment.
Full Body Harness	a body-holding device that is designed to transfer to an employee's torso and upper legs the forces experienced during and after the arrest of a fall, and that depending on the classification of the device, a full body harness may also be designed for travel restraint, work positioning or suspension in addition to fall-arrest.
Free Fall	the vertical distance between the onset of a fall to the point where the fall arresting system begins to apply force to arrest the fall.
Horizontal Life Line	a rope made of synthetic fibre or wire, a rail or other similar device that is attached horizontally to a minimum of two anchor points, and to which a fall-arresting system or travel restraint system may be attached.
Lanyard	a flexible line used to attach a full body harness or body belt to an energy absorber, a vertical life line, a horizontal life line or an anchor point.
Life Line	a manila rope with a minimum diameter of 19 mm or a rope or strap of equivalent strength;
Personal Fall Protection System -	the components of a fall protection system for which the employee is responsible and includes a full body harness, a body belt, an energy absorbing lanyard, a fall arrester, a self-retracting device and the connecting hardware.
Travel Restraint System	an assembly of components designed to prevent an employee from reaching an unguarded edge or an opening.
Vertical Life Line	a flexible line or rope made of synthetic fibre or wire or a rail attached to an anchor point to which a fall-arrester is attached;

5.0 ROLES AND RESPONSIBILITIES

5.1 Employer's must:

- provide employees with a fall-protection system when an employee is at risk of falling.
- consider the use of guardrails, travel restraint or fall-restricting systems, unless employees are working on surfaces with slopes exceeding 6 in 12 guardrails are not permitted.
- ensure the components of the fall-protection system are designed, erected, installed, assembled, used, handled, stored, adjusted, maintained, repaired and dismantled according to the manufacturer's specifications and meet the specified CSA standards as listed.
- ensure the fall-arresting system consists of the required components, including full body harness, self-retracting lanyard, energy absorbing lanyard or lanyard and energy absorber, and appropriate anchor point or horizontal life line.
- ensure employees establish a rescue plan before any fall-arresting system is used.
- remove, repair or destroy any fall arrest component that was involved in stopping a fall. A quarantined area to store damaged fall protection equipment must be established.
- ensure anchor points are established, maintained and inspected.
- ensure employees are instructed in the fall-protection system and in the post-fall rescue procedure before being allowed into an area where there is a risk of falling.
- establish a code of practice when employees are required to work from a height of 7.5 m or more, where a safety monitor and work procedure is used while weatherproofing , or as required by an officer.
- ensure a competent person trains employees on use, maintenance and inspection of a fall-protection system, unless the system used is a guardrail, and training is documented and made available to a WorkSafeNB officer on request.

5.2 Employee's must;

- be trained and competent on the use of fall protection
 - always use the fall-protection equipment provided by the employer , as instructed by your employer.
 - inspect each component of your personal fall-protection system before each use, and as recommended by the manufacturer.
 - report defective or inadequate equipment to your employer and not use the equipment.
 - care for the fall-protection equipment properly while using it.
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6.0 STANDARD

6.1 General

Fall-protection systems play an important role in protecting employees from injuries due to a fall. There are many different types of systems, including guardrails, travel restraint systems, fall-arrest systems and the use of warning lines and safety monitors. Falls can happen from ladders, permanent structures like roofs, and temporary structures such as scaffolds and other types of work platforms.

The best forms of fall-protection systems are those that prevent employees from falling and include guardrails (passive system) and travel restraint (active system). As a result, the regulation requires employers to first consider these systems ahead of other systems.

6.1.1 The Program

A fall protection program must be designed to protect workers and include the following elements:

- understanding of the requirements of fall protection identified in the Occupational Health and Safety Regulation 91-191
- identifying fall hazards
- selecting and using appropriate equipment and systems
- inspecting and/or replacing fall protection equipment, systems, and identifying anchor points
- maintaining inspection records
- providing a comprehensive training program
- maintaining training records

6.2 Hierarchy

The preferred hierarchy for fall protection, in order of importance, is:

1. Eliminating the hazard
2. Fall prevention (passive fall protection)
3. Travel restraint
4. Fall arrest

6.3 Eliminate the Hazard

Once a fall protection plan has been prepared, one of the first steps to safe guarding workers at heights is to try to eliminate the fall hazard completely. This may be accomplished with a modification to work procedures or engineering out the hazard with a modification to the area.

Examples include: relocating a panel box to a more accessible location, using a pole and adaptor to change a light bulb, or installing a chain on an overhead valve so that it may be operated while standing on the ground.

Whenever possible, the work procedures and area should be modified to eliminate the need to work at heights; effectively engineering out the hazard.

6.4 Fall Prevention (Passive Fall Protection)

In areas where the fall hazard cannot be engineered out the best option is to use a passive fall protection system. A passive fall protection system is the control of a fall hazard by means other than the wearing of personal protective equipment (PPE). Examples are guardrails, safety nets, warning

lines, etc.

Fall prevention refers to those systems and techniques that eliminate the possibility of a fall through the construction of barriers, guardrails, covers, etc.



6.5 Travel Restraint

Travel restraint systems are designed to eliminate the possibility of workers falling to lower levels. Lanyards must be shortened and/or anchor points must be positioned such that workers cannot go beyond the edge where the potential for a fall exists.

Equipment used in travel restraint systems is generally less sophisticated than those employed in fall arrest systems, since the equipment simply needs to hold the worker back and not support them in a fall. It is important to remember to take all related hazards into account when using a travel restraint system.



6.6 Fall Arrest

A fall arrest system is the very last line of defense against fall hazards.

Fall arrest assumes the inevitability of a fall and is designed to stop a worker from hitting the level below thus minimizing injury.

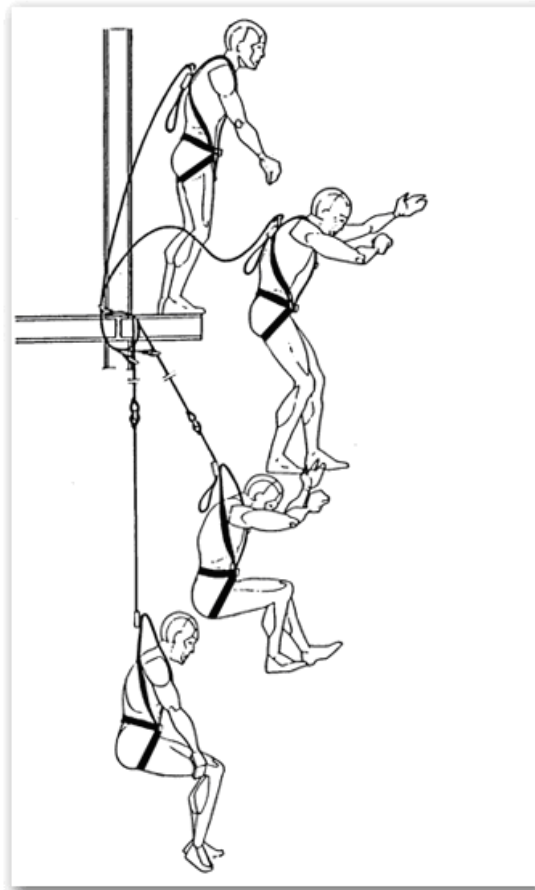
It must be stressed that fall arrest systems are not a replacement for care and attention in the workplace.

Any fall arresting system shall consist of the following:

- a) a full body harness that is designed and rated by the manufacturer for the employee's body type and adjusted to fit the employee
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- b) a self-retracting lanyard, an energy absorbing lanyard or a lanyard and energy absorber that is rated by the manufacturer for the employee
- c) unless it is a horizontal lifeline, an anchor point that is capable of withstanding a 22 kN force (~5000 lbs) or, if under the direction of a competent person, four times the maximum load that may be generated in the fall arresting system.

All components of a fall-protection system shall be compatible with one another, the work environment and the type of work being done. Compatibility is not about brand.



6.7 Components

The components of a fall protection system:

- a) shall be designed in accordance with the applicable standards and regulations.
- b) shall be erected, installed, assembled, used, handled, stored, adjusted, maintained, repaired and dismantled in accordance with the manufacturer's specifications, and
- c) shall meet the requirements of the applicable standards and regulations.

6.8 Code of Practice

There is a regulatory requirement for a code of practice to be written when a fall-protection system is required if,

- a) the workers are working from a height of 7.5 m (25ft.) or more,
- b) an officer (WorkSafeNB) requires that the code of practice be written.

The code of practice must be readily available at the workplace before work begins and employees must have received instruction with regards to the code of practice. The code of practice is not required if fixed and permanent guardrails are in place to protect the worker.

The code of practice shall include the following information:

- a) possible hazardous situations, including a description of the hazards and the possible effects on the health or safety of workers;
- b) the identification of workers at risk;
- c) the location where the code of practice might apply;
- d) the methods and equipment to be used including inspections and procedures;
- e) the procedures and equipment which might be required in the event of an emergency;
- f) the times, days, or events during which the code of practice might be applicable;
- g) the identification of training needs;
- h) the identification of the person responsible for implementing the code of practice; and
- i) the name of the safety monitor, if applicable, and the training the safety monitor has received.

The code of practice will either be integral to a specific Work Method, in the case of Customer Service, Distribution and Transmission, or a separate document, in the case of Generation. The Code of Practice in conjunction with the Tailboard Form must address the requirements listed above.

6.9 Inspection of Equipment

Each component of a fall-protection system shall be inspected as follows to determine whether there are any defective or inadequate components:

- a) visually by the worker before every use; and
 - b) Annually by a competent person as recommended by the manufacturer, installer or an engineer. Records of these periodic inspections must be maintained and available if requested. This requirement is required for anchors as well.
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If the inspection reveals a defect or inadequacy, no one shall use the fall-protection system until the defect or inadequacy has been eliminated.

6.10 Work Positioning

If a worker is required to work from a wood pole or other similar wood pole structure 3 m or more above a permanent safe level, NB Power shall provide and the employee shall continually use:

- a) a fall arresting system when the employee is ascending, descending or at rest, and
- b) a work positioning system in addition to the fall arresting system when the employee is performing work at the working level.

If it is impracticable to use a fall arresting system and a work positioning system, a fall restricting system when ascending or descending shall be used to secure the worker to the wood pole when at rest or at the working level.

6.11 Free Fall

A fall arresting system shall limit:

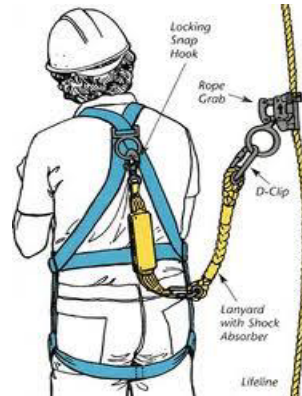
- a) free falls to the shortest distance possible, which cannot exceed 1.8 m or a shock level on the body of 8 kN, (~1800 lbs) and
- b) the total fall distance to an amount less than the distance from the work area to any safe level, water or obstruction below.
- c) An energy absorber must be used to ensure the forces on the body is minimized. Examine labels to ensure proper selection (weight ranges).

6.12 Vertical Life Line

A vertical life line in a fall-arresting system shall:

- a) extend to a safe level,
- a) be adequately secured or weighted at the base of the life line to prevent tangling or disturbance of the life line,
- b) be securely attached to an anchor point,
- c) be free of imperfections,
- d) be free of knots or splices, except for those that are necessary to connect the life line to an anchor point,
- e) be provided with protective devices at all sharp edges or corners to protect against cuts to or chafing of the life line, and
- f) be clearly identified as a life line by colour or other means.

A vertical life line in a fall-arresting system shall be used for its intended purpose only and shall be used by one employee at a time



6.13 Horizontal Life Line

As per New Brunswick Regulation 91-191 of the Occupational Health and Safety Act, horizontal lifelines shall be:

- designed and certified by an engineer to meet the requirements of CSA Z259.16-04, Design of Active Fall Protection Systems;
- pre-engineered by a manufacturer or
- if it is not certified or pre-engineered, constructed to the safety requirements in New Brunswick Regulation 91-191, Section 49.7(1) if it is not certified or pre-engineered.



6.14 Rescue

Before any use of a fall-arresting system by a worker, a rescue procedure to be used for rescuing an employee in an emergency shall be developed.

The worker(s) shall be trained to use the procedures above for rescuing another employee in an emergency.

6.15 Post Fall Arrest

If a fall-arrest system arrests a fall, all components, including connecting components of a fall-arresting system shall:

- a) be immediately removed from service and inspected by a competent person and,
 - b) repaired to the designer's or manufacturer's specifications, or
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- c) destroyed when a defect is observed.

6.16 Suspension Trauma

Suspension Trauma (orthostatic intolerance) is a condition that may develop and progressively worsen in a person who is suspended in a vertical position and is motionless for a prolonged period of time while in a fall arrest harness.

Under normal circumstances, the muscular action in the legs help a series of one way valves in the veins move blood from the legs back to the heart where it is then pumped to the lungs to be re-oxygenated. When a person is suspended, the force of gravity on the groin area and the lack of movement of the extremities results in the blood pooling in the legs by accumulating in the veins. This accumulation of blood in the legs reduces the amount of blood the heart has available to pump to the rest of the organs, specifically the brain. Should there be a reduction in the amount of oxygen being carried to the brain as a result of venous pooling in the legs, the person may lose consciousness or “faint” while still suspended.

Suspension trauma and its subsequent adverse effects can be avoided by including in the fall protection training, the opportunity to reinforce the proper fit of a harness along with the development of comprehensive rescue plan.

Prevention

If someone is stranded in a harness, but is not unconscious or injured, and has something to kick against or stand on (such as a rock ledge, structure or building) it is helpful for them to use their leg muscles by pushing against it every so often, to keep the blood pumping back to the torso.

Suspension trauma straps help prevent injuries and avoid excessive discomfort when you are suspended in a full body harness. Simply deployed, the straps allow a worker to step into the strap and stand up to relieve the pressure on the harness leg loops.



A simple addition to any fall protection harness, these straps give much needed relief while a rescue operation is carried out.

Suspension Trauma Straps are a mandatory piece of equipment when wearing a harness when working at heights.



6.17 Note: Suspensin trauma straps are mandatory when working at heights and relying on a harness for fall arrest. Training

NB Power will designate competent trainers. The competent trainers will be responsible to train an NB Power worker in the use, maintenance and inspection of a fall-protection system for the task being performed unless the fall-protection system is a guardrail.

NB Power shall ensure that the competent trainer provides the training and prepares a written training record which includes the following information:

- a) the name of the worker receiving the training;
- b) the date the training took place; and
- c) the name of the trainer

6.18 Records

- Annual inspection records (fall protection equipment and anchors)

7.0 APPENDIX

A: Fall Protection Code of Practice Form #0441

DOCUMENT APPROVAL/REVISION RECORD

Revision #	Date yyyy/mm/dd	Revision Summary	Author	Reviewed By	Approved By
01	2019-11-05	New format	N. Allen	Don Vautour	Robin Condon
02	2021-07-05	Section 6.17 Suspension trauma straps are mandatory	N. Allen	M. Mallery	R. Condon

R. Condon

Director of Total Health & Safety

Health & Safety Standards



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Number:
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2021-07-20

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02

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Title:
Fall Protection/ Working at Heights



Appendix A: Fall Protection Code of Practice Form #0441

 Énergie NB Power <small>Form # 0441 Rev: 11-2019 SCN 00040465</small> FALL PROTECTION CODE OF PRACTICE FORM - WORKING AT 7.5 M AND ABOVE Section 50.2(4), General Regulation 91-191	Date:			
	Time:			
	WO#			
	WP#			
	Job Location:			
Functional Location (equipment):				
PERSON RESPONSIBLE FOR IMPLEMENTING THE CODE OF PRACTICE:				
Print Name:				
Signature:				
WORK DESCRIPTION:				
APPLICATION OF THE CODE OF PRACTICE				
A "code of practice" SHALL be implemented under the following situations when:				
<input type="checkbox"/>	Working from a height of 7.5 m or more (50.2(1)). OR			
<input type="checkbox"/>	When weatherproofing a roof using a safety monitor			
Safety Monitor				
Print name:				
Safety Monitor Trained: = Yes = No				
As a Safety Monitor, are you aware of your responsibility? <input type="checkbox"/> Yes <input type="checkbox"/> No				
FALL PROTECTION INSPECTIONS ** Section of the OHS Regulation 91-191**				
	Daily	Annual		
Harness **50.5(1)	<input type="checkbox"/>	<input type="checkbox"/>		
Lanyard **50.5(1)	<input type="checkbox"/>	<input type="checkbox"/>		
Self Retracting Lifelines (SRL) **50.4	<input type="checkbox"/>	<input type="checkbox"/>		
Rope Grabs **50.4	<input type="checkbox"/>	<input type="checkbox"/>		
Vertical Lifelines **49.4(1)	<input type="checkbox"/>	<input type="checkbox"/>		
Horizontal Lifelines **50.5(1)	<input type="checkbox"/>	<input type="checkbox"/>		
Temporary Guard Rails **50.4	<input type="checkbox"/>	<input type="checkbox"/>		
Anchors **49.3(3)	<input type="checkbox"/>	<input type="checkbox"/>		
Aerial Work Platforms **50.4	<input type="checkbox"/>	<input type="checkbox"/>		
OTHER				
EMPLOYEES ATTENDANCE / TRAINING REQUIREMENTS				
Print Name	Initial	Have you been trained in your personal fall protection? (harness/lanyard)	Do you understand the fall protection equipment and systems being used on this job?	Do you understand the rescue plan?
RESCUE PLAN (equipment / procedures/ description of possible hazardous situations)				
SKETCH (optional)				