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Guide to Fall Protection Regulations



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GUIDE TO FALL PROTECTION REGULATIONS

Introduction

This guide is intended to provide assistance to Prince Edward Island employers and workers with the application of the PEI Fall Protection Regulations (“the Regulations”) made under the Occupational Health and Safety Act, Cap. O-1.1, including amendments to June 2012 .

This publication is not a substitute for the Regulations, the manufacturer’s instructions specific to fall protection equipment, nor required training pursuant to the Regulations.

The Regulations outline the minimum standard required of employers and workers when planning for and using fall protection systems. For a complete copy of the Occupational Health and Safety Act and Regulations, please visit www.wcb.pe.ca/Workplace/OHSActAndRegulations.

The Regulations reference several standards provided by the Canadian Standards Association (CSA), which can be viewed online after registering your email address at www.ohs.csa.ca. Where the Regulations reference standards from the American National Standards Institute (ANSI), these can be found by contacting www.ansi.org. Both CSA and ANSI standards are copyright protected documents.

Section 1.(2) of the Regulations states that where there is an inconsistency between the Regulations and the manufacturer’s specifications or a CSA or ANSI Standard referenced in the Regulations, the Regulations will prevail to the extent of the inconsistency.

General Requirements and Responsibilities

When determining whether a means of fall protection is required for a certain task being performed by a worker, refer to the conditions in section 2.(1) of the Fall Protection Regulations:

- 2.(1) Where a worker is exposed to the hazard of falling from a work area that is*
 - (a) 3 m or more above the nearest safe surface or water;*
 - (b) above a surface or thing that could cause injury to the worker if the worker were to fall on the surface or thing; or*
 - (c) above an open tank, pit or vat containing hazardous material.*

When a risk to a worker exists based on the above conditions, the employer is required to ensure an adequate means of fall protection is provided and used properly. When a fall arrest system is provided to a worker, the worker must wear it while in the work area (section 2.(2)). For clarification, the requirements for an employer or a worker apply to a self-employed person as well (section 1.(3)).

There are few exceptions to the requirement for a means of fall protection, one being where a worker is entering or exiting a work area by a safe means of access and egress. For details on exceptions, refer to sections 2.(3) and (4) of the Regulations.

Training Requirements

The Regulations were amended in 2012 to include the employer's responsibilities to ensure those who are required to wear fall protection are properly trained to use it. Under section 2.1(1), the employer must ensure workers using a fall protection system are trained in its use by a competent person.

A competent person is defined at section 1.(1)(g) as one who is

- (i) qualified because of that person's knowledge, training and experience to do the assigned work in a manner that will ensure the health and safety of persons in the workplace, and
- (ii) knowledgeable about the provisions of the Act and the regulations that apply to the assigned work, and about potential or actual danger to health or safety associate with the assigned work.

The employer is responsible to ensure the training provided to workers using a means of fall protection includes training in the use, care and inspection of the system and review of the provisions of the Regulations that apply to the means of fall protection by a competent person. Please refer to our website for how to choose a service provider to help determine their competency.

Training Records. The employer must further ensure, under section 2.1(2,3) that training records for each worker must be kept during employment and for two years afterwards and must be made available upon an officer's request. The records must include the following:

- the name of the worker who was trained
- date of training
- name of the competent person who provided training
- any training material provided to the worker

For details on service providers who offer fall protection training, visit our website at www.wcb.pe.ca or contact the Occupational Health and Safety Division at 902-368-5697.

Selection of Fall Protection System

The selection of the particular means of fall protection is dependent upon the circumstances and the job task. The most ideal choice of a means of fall protection will be one that removes the risk of falling entirely. For example, it is preferable to provide a fixed barrier to prevent a worker from falling than to provide personal protective equipment (such as safety harness and lifeline). In this way, the worker is never in a position where an actual fall may occur. Otherwise, the worker must understand, care for, and rely on the personal protective equipment to safely arrest a fall.

Types of fall protection systems outlined in the Regulations include:

- A fall arrest system (Section 3)
- A guardrail (Section 4)
- A safety net (Section 6)
- Temporary flooring (Section 9)
- Any other means of fall protection that provides an equal or better level of safety.

Fall Protection Plan

When the selection of a means of fall protection includes a fall arrest system or a personnel safety net, the employer is required to have a **written fall protection plan** in accordance with Section 3.(11) of the Regulations. The plan must specify the procedure to assemble, maintain, inspect, use and disassemble the fall arrest system or personnel safety net. This plan must be available on the site and be followed. The plan must further include a procedure to rescue a worker who has fallen and is suspended by the system. Fall protection plans will have to be specific to the site where being used, as the requirements and equipment used will change from site to site.

See a template for a Rescue Plan at Appendix 1.

A rescue procedure is a critical component of a fall protection plan that is often overlooked. When fall protection requires the use of a fall arrest system by workers, a procedure must be in place which provides for the quick rescue of any fallen/suspended worker and the safety of the rescuers.

When putting a plan in place for rescue, utilize the KISS (Keep It Safe & Simple) principle by ensuring the simplest and safest form of rescue be considered first (man lifts, bucket aerial devices, mobile work platforms). The first responder system (9-1-1) should not be the first line of defense. This should only be used as part of an emergency plan when all rescue efforts have failed.

Types of Fall Protection

Fall Arrest Systems

A fall arrest system is defined as a system of physical components attached to a worker that stops a worker during a fall. Section 3.(1) of the Regulations outlines the requirements for a fall arrest system, including the following:

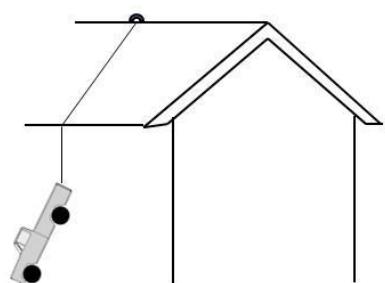


Figure 1. Anchor point strength

Anchor point. An anchor point means a secure point of attachment for a lifeline or lanyard. An anchor point must be able to withstand the greater of either the maximum load likely to be imposed on it if a fall was arrested or a load of 17.8 kN (approximately 4000 lbs, similar to the weight of a small pickup truck, as illustrated in Figure 1).

Lanyard. A lanyard is a flexible line or strap attached to a worker's harness at one end and to a lifeline, static line or anchor point at the other. The lanyard must comply with *CSA Standard Z259.11-05*

Energy Absorbers and Lanyards. Where the lanyard is not equipped with a personal energy absorber, the total fall distance for the

worker shall not exceed 1.22 m. A lanyard equipped with a personal energy absorber that complies with the *CSA Standard Z259.11-05 Energy Absorbers and Lanyards* will reduce the deceleration forces of a fall arrest to 4 kN or less. In that case, the elongated length of the deployed lanyard must be considered when determining the lanyard used and its point of attachment to the fall protection system to ensure the worker, if he/she fell, would not reach the ground before the fall can be arrested. Always check the manufacturer's specifications to determine the maximum elongation distance for each lanyard used.

Full Body Harness. The harness (pictured in Figure 2) must be attached to a lanyard, and be adjusted to fit the user of the harness. Too loose a harness will compromise its effectiveness to protect the worker during a fall. Consult with your training and/or manufacturer's specifications for proper adjustment. The harness must comply with the *CSA Standard Z259.10-06 Full Body Harness*, and is designed to transfer the deceleration forces of a fall arrest to the worker's torso and upper legs. A full body harness may be designed for travel restraint, work positioning or suspension.

In summary:

- A fall arrest system must be adequately secured to an anchor point. A lifeline, rope grab or static line may be used as well, as long as they meet requirements listed in Section 3(2,3&4).
- A lanyard that is appropriately configured so that it prevents a fall that exceeds the free fall distance and/or forces as noted in section 3(1)(c).
- The lanyard and lifeline, if one is used, must be attached to an anchor point and a full body harness on the worker.
- All components (lifeline, lanyard, full body harness, rope grab, and static line) must comply with the appropriate CSA Standard.



Figure 2. Components of a Personal Fall Arrest System

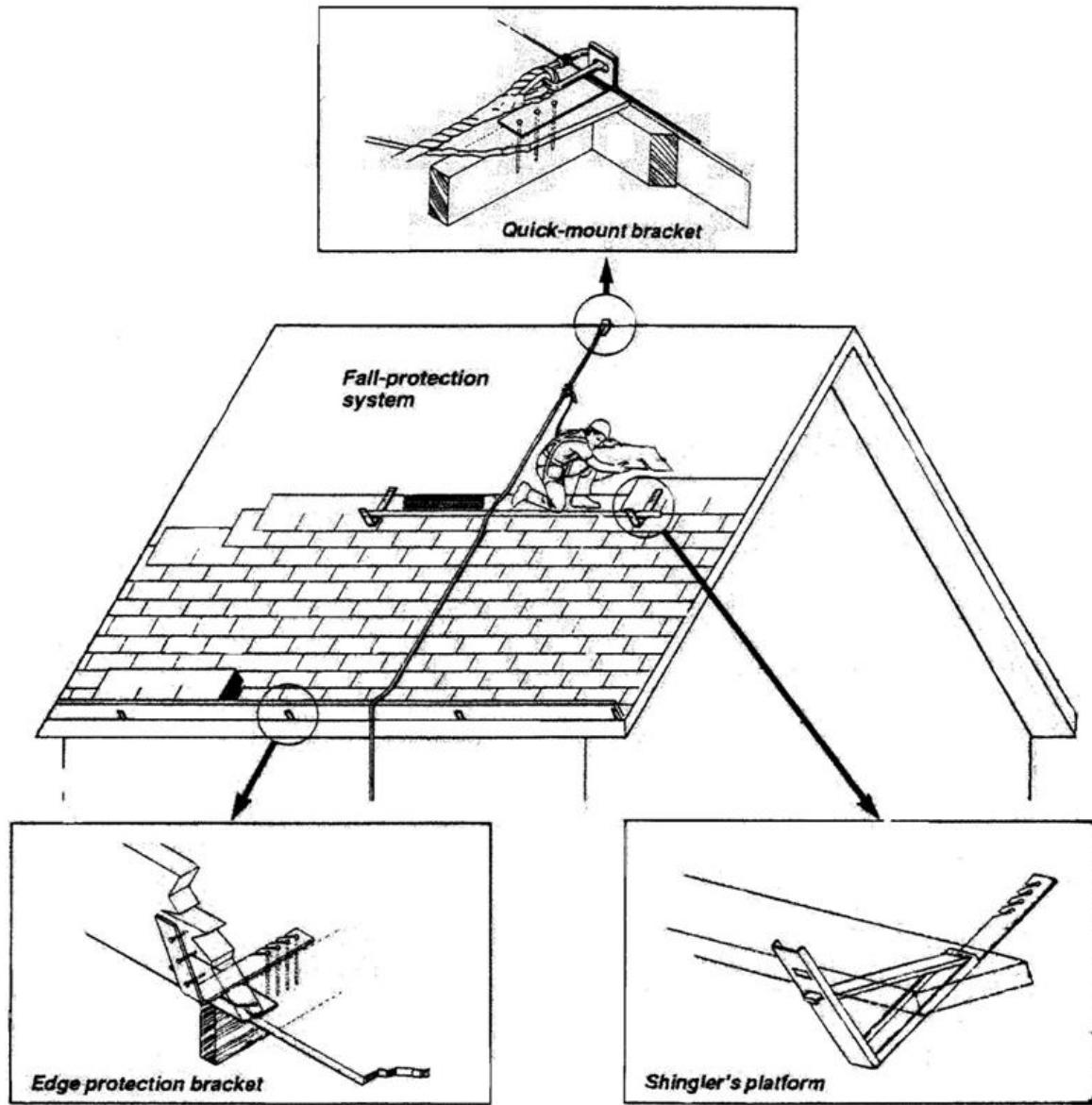
Lifeline. A lifeline can be used to give the worker more freedom of movement. A lifeline means a vertical line attached to a fixed anchor point or a static line at one end and a lanyard or worker's harness at the other. Under Section 3.(2) of the Regulations, lifelines must comply with *CSA Standard Z259-2.1-98 Fall Arresters, Vertical Lifelines and Rails*. Lifelines must also meet the following requirements:

- Must extend to a safe surface below the work area.
- Must be secured at the bottom to prevent tangling and disturbance of the line.
- Must be securely attached to an anchor point.
- Must be clean, free of knots, lubricants and imperfections.
- Must be free of splices except where they connect to an anchor point.
- Must have softeners covering all sharp edges to protect against cuts or chafing.
- Must be identified as a lifeline with color or some other means.
- Must not be used for any other purpose.

Section 3.(3) of the Regulations outlines restrictions for lifeline use. A lifeline must be used only by one worker at a time. One lifeline, one anchor, one worker. A rope that has been used for another purpose can never be used as a lifeline.

Rope Grab. A rope grab is a mechanical fall-arrest device that is attached to a lifeline and a lanyard and locks itself immediately if the worker falls. Under section 3.(4) of the Regulations, all rope grabs must comply with *CSA Standard Z259.2.1-98 Fall Arresters, Vertical Lifelines and Rails*.

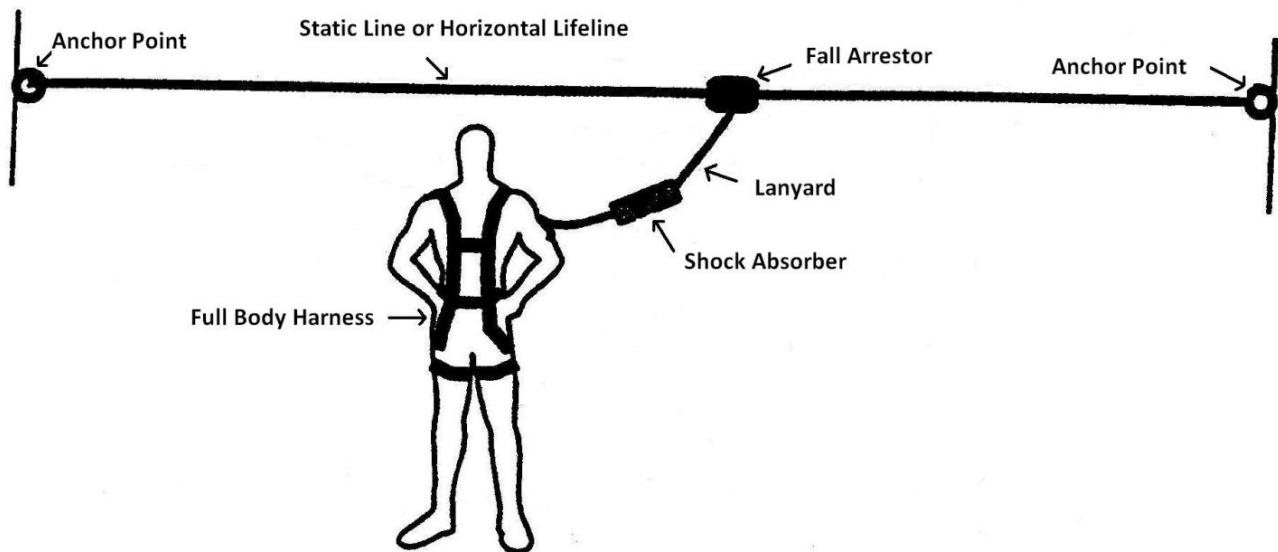
Figure 3. An example of a fall protection system using a body harness, a rope grab, a lifeline, and an engineer designed anchor point.



Static Lines. A static line is a horizontal life line attached to two or more fixed anchor points. Section 3.(9) of the Regulations state a fall arrest system can be attached to the static line as long as the line meets the following requirements:

- Complies with *CSA Standard Z259.13-04 Flexible Horizontal Lifeline Systems and CSA Standard Z259.16-04 Design of Active Fall Protection Systems*
- Must have a nominal diameter of at least 12.7mm
- Must have a vertical support every 9 m
- Must have a maximum deflection, when taut, of no greater than 381mm
- Be equipped with turnbuckles at the ends; another comparable device may be used as long as it can be proven to provide equivalent protection
- Be made of Improved Plow Wire Rope
- Be equipped with softeners at all sharp edges; and
- Its components must withstand the maximum expected load or 8kN whichever is greater.

Figure 5. A static line and its components



Inspection Requirements. Section 3.(5) of the Regulations require the employer to ensure the fall arrest system is inspected by a **competent person prior to each shift**.

A competent person is defined at section 1.(1)(g) as one who is

- (i) qualified because of that person's knowledge, training and experience to do the assigned work in a manner that will ensure the health and safety of persons in the workplace, and
- (ii) knowledgeable about the provisions of the Act and the regulations that apply to the assigned work, and about potential or actual danger to health or safety associate with the assigned work.

This means that every work site requiring fall protection must have a competent person available to inspect. Under section 3.(6,7) of the Regulations, the competent person who inspects a fall arrest system must advise the employer when a defect is found in the condition or function of the components, and the employer who becomes aware of the defect must ensure the fall arrest system is not used until the defective component(s) can be replaced or repaired. The employer must also ensure a fall arrest system is not used after it has arrested a worker's fall until it has been thoroughly inspected by a competent person and, if found defective, is repaired back to the original manufacturer's specifications or replaced (section 3.(8)).

Swing Fall. When setting up your system it is important to consider the possibility of a swing fall (see Figure 4). This is a pendulum effect that can occur when the anchorage is not located directly above the worker's head or if a vertical lifeline is not installed and used properly. The swing fall may not be hazardous itself. The hazard exists if, during the swing, the worker comes into contact with any obstruction that may be in the swing area. The injury from a swing fall can be just as serious as falling the same distance straight to the ground.

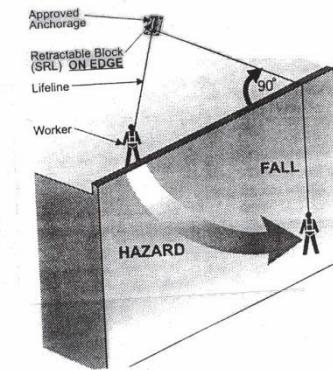


Figure 4. Swing Fall

Fall Arrest Systems for Arborists: An arborist is defined as a person who is trained and employed to climb trees for any economic or scientific purpose. According to section 3.(10) of the Regulations:

- An arborist's system must include tree climbing or tree trimming harness or saddle. This must be adequately secured to an anchor point or a lifeline that is securely fastened to an anchor point or attached to a static line that is securely fastened to an anchor point.
- The system must include a climbing rope or safety strap and, where practicable, a second climbing rope or safety strap that will provide additional stability and back-up fall protection. It must hold either the maximum load likely to be imposed or 17.8 kN*, whichever is greater.

In circumstances where the density of tree branches prevents the arborist from crotching, the worker must wear the fall protection system if it may be worn, only where and to the extent that is reasonably practicable (see section 2.(4)(c) of the Regulations).

Guardrails

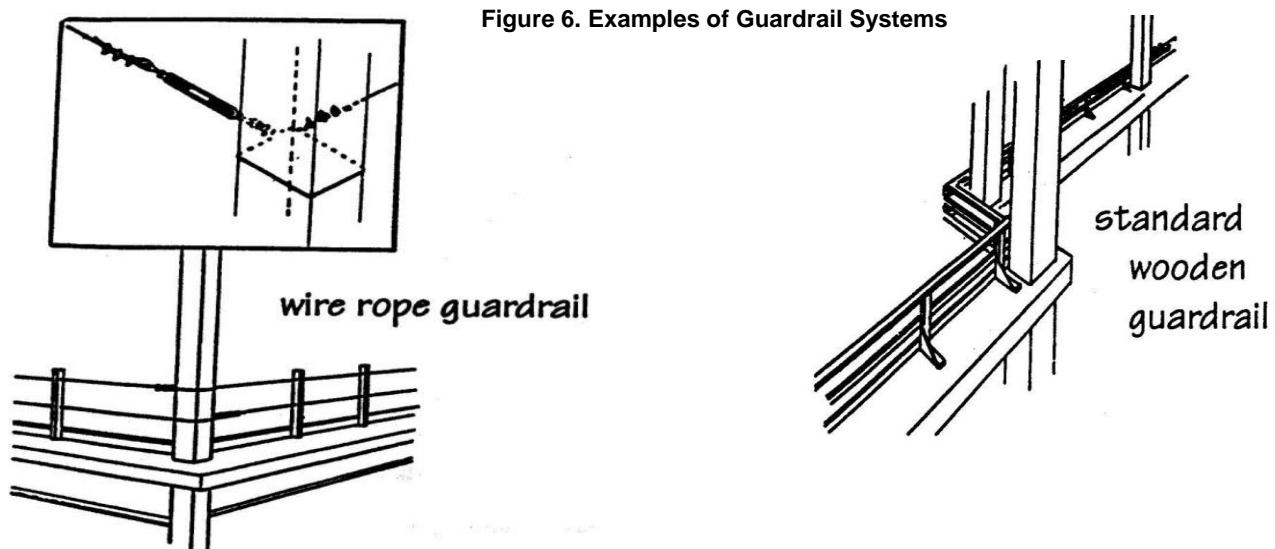
When guardrails are used as a means of fall protection, they must be constructed or designed to meet the specifications outlined in section 4(1) of the Regulations.

- They must extend around any uncovered opening in a floor or other surface.
- They must also be placed around the perimeter or open side of a mezzanine, balcony or other surface at a work area from which a worker may be exposed to the hazards of a fall.
- The posts must be spaced at intervals of at least 2.4 meters.
- The posts must be secured by an attachment to the structure being worked on. If this is not feasible then by another means that can be shown to have an equivalent level of safety.
- The top railing must be between .91 and 1.06 m above the surface workers are working from. It must be securely fastened to the posts.
- A toe board is required and must be securely attached to the posts. The toe board should be 102mm high.
- An intermediate railing must be on the inner side of the posts, midway between top rail and the toe board.

Wooden Guardrails. According to section 4.(2) of the Regulations, guardrails made of wood must be made of a minimum of the following:

- The top and intermediate rails and posts must be made of wood that is at least 51mm by 102mm.
- The toe board must be at least 25mm by 75mm.
- The lumber must be at least grade two spruce or better.

Measurements of lumber are nominal for dressed dimensions, unless rough lumber is used.



Wire Rope Railings. Section 4.(3) of the Regulations outline the requirements for guardrails with wire rope railings. Where wire rope railings are used, the top and intermediate railings must be at least 8 mm in diameter. They must be equipped with turnbuckles to provide enough tension to be equal to the strength of the wood rails. The toe board and posts must be made of wood as above. If wooden posts are used, they must comply with the regulations above. Steel posts and toe boards can be used as well. The wire must have high visibility markings every 1.5 m on the top railing.

Manufactured Guardrails. A manufactured guardrail can be installed or constructed as long as it can be shown to provide an equivalent level of protection to the wood railings (section 4.(4)). In general, this means a purchased and/or engineer designed system.

Building Shafts. Under section 5 of the Regulations, where there is no work platform installed at a work area, building shafts must be protected with guardrails as in Section 4. They must also be marked with a warning sign to indicate the presence of an open building shaft (e.g., an elevator shaft).

Safety Nets and Debris Nets

Safety Nets. Safety nets are used where it is difficult or impossible to arrange for guard railing, or to provide a proper anchoring and lifeline system for fall arrest. The most common applications for safety nets are bridge work or structural steel erection.

Safety nets may be installed as a form of fall protection, provided they meet the requirements outlined in section 6.(1,2) of the Regulations:

- The personnel safety net must be installed within at least 4.6 m below the work area.
- The net must extend 2.4m beyond the work area on all sides.
- The net must be set up to ensure that a falling worker can not come in contact with another surface or any other obstruction if the worker falls into the net.
- If one or more nets are connected, the splice joints must support the maximum expected load.

Personnel safety nets must comply with *ANSI Standard A10.11-1989 Safety Nets used During Construction, Repair and demolition Operations*. Section 6.(2) of the OH&S Fall Protection Regulations.

Debris Nets. Debris nets are those used to catch material and debris that can drop from work areas. Section 7.(1,2) of the Regulations requires employers to ensure debris nets are used in situations where workers can be exposed to falling objects or debris from above the work area. Debris nets must not be more than 4.6 m below the work area, and must meet *ANSI Standard 10.11-1989 Safety Nets used During Construction, Repair and Demolition Operations*.

Safety Belts

Safety Belts: Safety belts cannot be used for fall arrest! Safety Belts are used for **work positioning or travel restraint only**. Body belts have been shown to cause extensive internal injuries if they are fallen into, because they put great stress on unprotected internal organs in the abdomen. Belts are never an acceptable part of a fall arrest system. Section 8 of the Regulations requires employers to ensure any safety belt used is in compliance with *CSA Standard Z259.1-95 Safety Belts and Lanyards of CSA Standard Z259.3-M1978 Lineman's Body Belt and Lineman's Safety Strap*.

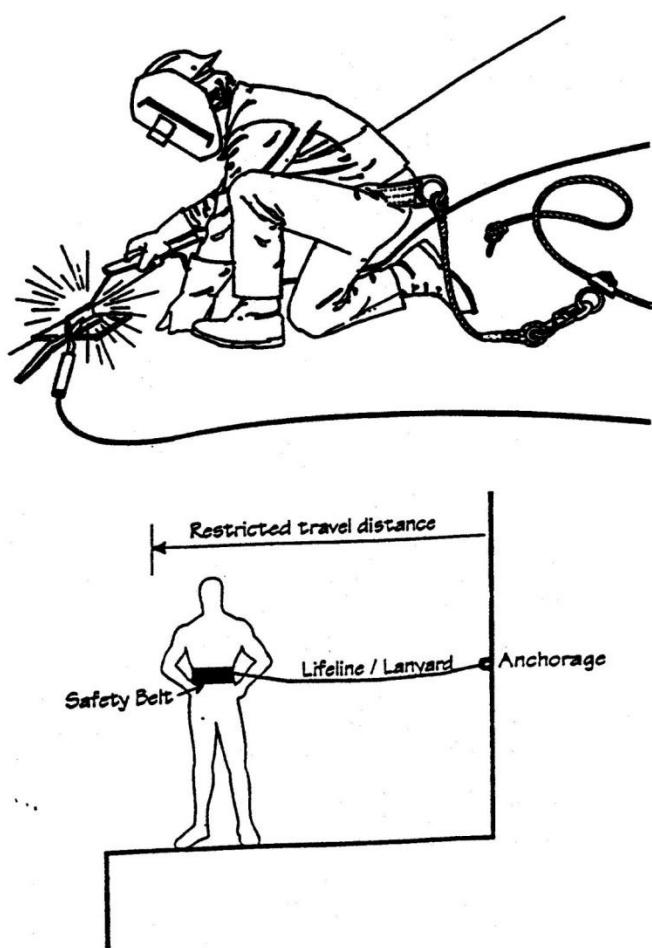


Figure 7 - Travel Restraint with Safety Belt

Work Positioning:

Body belts can be used for work positioning tasks when aerial access is difficult or not practical. A common example of this is working from a pole to work on electrical or communication systems.

Travel Restraint:

A travel restraint system is intended to limit the worker's movement so the worker is unable to reach a location where there is a risk of falling, i.e., open perimeters of work surfaces such as roof/mezzanine edges.

The restraint system usually consists of a safety harness or safety belt, lifeline and/or lanyard and anchor. The safety belt is secured to a lifeline or lanyard having a fixed length which is attached to a secure anchor point. The length of the lifeline or lanyard is such that the worker can only proceed to within approximately 1 m of an opening or edge.

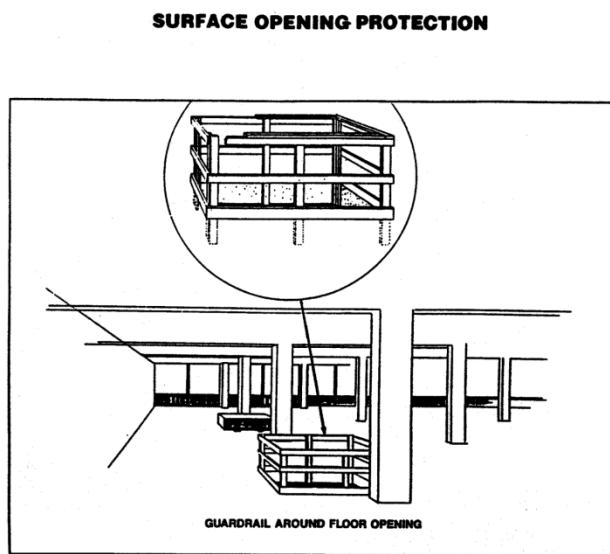
Under no circumstance should a travel restraint system be rigged so that a worker is in a position to be exposed to a potential fall.

Temporary Flooring

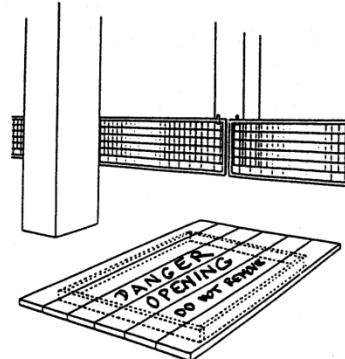
Temporary Flooring: Temporary flooring means a horizontal working surface that is designed to give access to areas that do not have permanent flooring and will prevent a worker from falling. Section 9 of the Regulations outlines the requirements where temporary flooring is constructed or installed at a work area:

- It must be installed or constructed at each floor level where work is being done.
- It must cover the whole work area. Any openings necessary to do work must have a guardrail.

Figure 8



- The temporary flooring, including the supports it is built on, must be strong enough to withstand four times the maximum expected load.
- It is common industry practice to mark on the temporary flooring that there is an opening underneath to communicate the hazard to workers working in the area.



A surface opening in the floor of a work area (eg. An elevator shaft) poses a hazard as an unguarded opening and, if it is 3 metres above a safe surface, it must be protected by temporary flooring, as indicated above, or by guardrailing (see previous section called "Guardrails"), or some other adequate means of fall protection.

Measures Required Where Risk of Drowning

Working Over Water. The Regulations require measures to be taken by the employer in situations where a worker is performing work over water and where there is a risk of drowning if the worker falls. Section 10 of the Regulations states the following requirements must be met:

If the work surface is less than 3 m above the water, the worker must be provided with a personal floatation device. In this situation a means of rescuing the fallen worker must be in place. This must include a boat, a life buoy with 15 m of polypropylene rope that is at least 10 mm in diameter (or another equivalent material), a boat hook and an audible alarm system to initiate a rescue procedure.

Workers must be designated and available to perform a rescue should it be necessary. These workers must be trained in the safe use of rescue equipment and rescue procedures. In addition, there must be enough rescue workers on site to do the rescue safely.

Workers must wear the personal floatation devices issued to them when working less than 3 m over water.

The flotation devices must comply with *CGS Standard 65.11-M88 Personal Flotation Devices*.

In situations where work is done above water that has a fast current and where it is practicable, a 10 mm diameter rope made of polypropylene or an equivalent material must be placed across the water with a buoy or some other flotation device attached.

A worker who is protected by a means of fall protection is not required to wear a personal flotation device as well.

Additional Information

For additional information on this publication or the Fall Protection Regulations, please contact us by visiting our website at www.wcb.pe.ca, by telephone at 902-368-5697 or toll free (in Atlantic Canada) at 1-800-237-5049. An additional resource is available on warning line systems, ie., the Guide for Control Zones for Flat Roofing on our website (here).

http://www.wcb.pe.ca/DocumentManagement/Document/pub_guideforcontrolzonesforflatroofing.pdf

Fall Protection Plan Template

Name of Employer:

Location of Work Site:

Start Date:

Brief description of the work project/task (sketch the project on the reverse page if desired):

Fall hazards specific to this work site:

Means of Fall Protection selected for this work:

- Fall Arrest**
- Personnel Safety Net**
- Other:** _____

Describe the procedures to be used to assemble, maintain, inspect, use and disassemble the means of fall protection:

Describe the procedures for the rescue of a fallen worker:

Section 3.(11) of the PEI Fall Protection Regulations states, "Where an employer uses a fall arrest system or a personnel safety net as a means of fall protection, the employer shall have a written fall protection plan that specifies (a) the procedure to assemble, maintain, inspect, use and disassemble the fall arrest system or personnel safety net; and (b) the procedure for the rescue of a worker who has fallen and is suspended by the fall arrest system or personnel safety net, but is unable to effect self rescue."

Fall Protection Plan Template – Appendix 1 (cont'd)

(Optional) Use this page to sketch the work area for which the means of fall protection is being used: