



## **FALL PROTECTION CODE OF PRACTICE**

REVIEWED OCTOBER 28 2014

OH&S CODE PART 9 & PART 22 SECTION 315

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### **OBJECTIVE**

To prevent fall hazards for employees who are required to work or be exposed to elevations that have a potential for falls. Employees working at elevations greater than four feet in a permanent structure (finished edge) or greater than ten feet where there is a potential for injury from falls, must use Fall Protection measures.

These include:

1. Establishing walls, floors and or guardrails.
2. Using work platforms and/or aerial lifts.
3. Operational changes/engineering controls.
4. Restrict workers travel.
5. Use of Fall Arrest/Restraint Equipment.
6. Control Zones
7. Safety monitor systems.
8. Danger Zones.

### **GENERAL REQUIREMENTS**

Fall protection system will be used when work is being done at a place; from which a fall of 3 meters

(10 feet) or more may occur, or:

1. Where a fall from a less height may result in an unusual risk or injury; for example, from a fall when working machinery that is in operation.
2. When practical for the work process, guardrails, barriers or other similar means of fall restraint will be used.
  - a) Use methods acceptable to Occupational Health and Safety regulations (i.e. guardrails).

**DEFINITIONS---** Measurements and weights are shown in both metric and imperial due to foreign workers' prevalent in the construction industry. Some key definitions are:

**Fall Arrest System:** a system that will stop worker's fall before the worker hits the ground.

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**Fall Protection System:** any of the following when used to protect a worker from a fall or minimize the risk of falling. (i. e. guardrails, safety belt, harness or related equipment, safety net, a control zone, or a safety monitored zone with approved procedures).

**Personal Fall Protection System:** an individual worker's fall protection system composed of a safety belt or full body harness, lanyard, lifeline, and any other connection equipment that is used to secure the worker to an individual anchor or to a horizontal lifeline system.

**Permanent Anchors:** must be rated for a minimum of 16 KN (3600 lbs.)

**Temporary Anchors:** must be rated for a minimum of 3.5 KN per worker (786 lbs.)

**Unusual Risk of Injury:** means, with respect to the risk of injury from a fall, there is a risk of injury greater than the risk of injury from impact on a flat surface; example, from a fall onto operating machinery or into a tank of chemical.

**Control Zone:** means the area between an unguarded edge of a building or structure and a line, which is set back a safe distance.

**Safety Monitor System:** means a system in which a trained worker is designated to monitor work activities in a control zone to ensure that work is done in a manner that minimizes the potential for a worker to fall.

**Danger Area:** means elevator shafts, scaffolding, slab edge, rooftops, and other tops, as well as any other area where it is possible to fall ten (10) feet or more. The Danger Area extends 8 feet back from any unprotected edge plus the height of any elevated work platform such as stilts or a ladder.

Example: A worker on 2 foot high stilts is in the danger area within 10 feet from an unprotected edge. Any worker within the danger area must have fall protection.

## **GUARDRAILS**

Guardrails must meet the design requirements of provincial regulation.

Please refer to "Part 22 – Guardrails, section 315 (1) to 315 (3) of the Alberta OH & S Code

1. When a guardrail must be removed to accommodate work:

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- a) Only that portion of the guardrail necessary to allow the work to be done may be removed and, the area around the removed guardrail is to be danger taped off.
  - b) Workers must use another fall protection system when the guardrail is absent.
2. The guardrail must be replaced;
- a) When the unguarded area is left unattended, at any time and
  - b) After work is completed if the circumstances still require guardrails.
3. Standard guardrails should be installed:
- a) Where any open-sided floor, work platform, runway, walkway or balcony 1.22 meters (4 feet) or more above grade or floor levels.

### **GLASS HAZARD**

Guardrails shall be installed across glass panels, the lower edges of which are less than 76 cm (30") above the levels of stair tread nosing, ramps, platforms, or landings. The exception is where laminated, wired or tempered glass is installed having strength equivalent to a guardrail.

#### Specifications for standard guardrails:

A standard guardrail shall consist of a top rail, approximately 107 cm (42") above the floor level, a toe board as required by regulation, and an intermediate rail centered at approximately the midpoint of the space between the underside of the top rail and the upper edge of the toe board. The top and intermediate rails and toe board shall be supported by vertical members spaced not more than 3 meters (10 ft.) apart. Where the guardrails are of wooden construction the top rail shall be securely fastened to the top of the upright or at the top of the upright on the side facing the protected area and the intermediate rail shall be securely fastened to the side facing the protected area.

### **SAFETY HARNESES**

A worker must wear a full body harness when using personal fall protection for fall arrest. Refer to

CSA standard Z259.10-06, Full Body Harnesses.

### **CONNECTING EQUIPMENT**

When a tool is used that could sever, abrade or burn a lanyard or safety strap, the lanyard or safety strap must be protected from abrasion or made of wire rope unless the worker is working near an energized conductor or in another work area where conductive lanyard or



safety strap cannot be safely used, in which case two nonconductive lanyards or safety straps must be worn, or other effective means of worker protection used.

### **GUARDRAIL REMOVAL PROCEDURES**

Prior to removing a guardrail, a worker must be protected by Fall Protection Equipment.

1. When a guardrail must be removed to accommodate work, it is to be removed in such a way that will not damage the rails.
  - a) Only that portion of the guardrail necessary to allow the work to be done may be removed, and
  - b) Workers exposed to a fall hazard must be protected by another Fall Protection System when the guardrail is absent.
2. A control zone may be established if the working surface:
  - a) Does not have a slope exceeding 4 vertical in 12 horizontal,
  - b) Is not on skeletal structure work.
3. The width of the Control Zone must be at least 6.5 feet back from the leading edge and clearly marked with a raised warning tape.
4. Workers will at all times, remain further from the unguarded edge than the width of the Control Zone, no other Fall Protection system need be used.
5. The guardrail must be replaced:
  - a) When the unguarded area is left unattended and
  - b) After the work is completed, if the circumstances still require guardrails.

### **SNAP HOOKS**

Snap hooks on lanyards and safety straps must be self-locking, to prevent roll-out hazard.

### **FALL PROTECTION SYSTEM**

Fall protection (Restraint) is rigged to allow the movement of employees only as far as the sides and edges of the walking/working surface. Anchorage points used for fall restraint have been confirmed to be capable of supporting four times the intended load, with a minimum strength requirement of 3.5 kilo Newtons per worker attached.[Part 9- Anchor Strength Temporary 152.1(1)]



1. Work within the confines of a perimeter (standard) guardrail.
2. Wear an approved body belt (CSA Z259.1-05, restraint only) or full body harness (CSA Z259.10-06) attached to securely rigged restraint lines where:
  - a) Body belt and/or harness conform to CSA Standard Z259.1 – 05 & Z259.10-06
  - b) Rope-grab devices must be used in accordance with manufacturer's recommendations and instructions.
3. Confirm all restraint components are compatible.
4. Inspect fall restraint components before each use for wear, damage and other deterioration. Remove defective components from service when the component's function strength has been adversely affected.
5. Clip restraint lines, independently of other lines, to the anchorage points. (One restraint line per anchor point.)

#### **FALL ARREST**

Employees exposed to a free fall distance of 3 meters (10 feet) or more (without restraint) must wear fall arresting equipment, using a full body harness system.

1. Inspect components of the fall arrest system before each use for wear damage and other deterioration. Defective components are removed from service when the components function or strength has been adversely affected.
2. Fall arrest equipment must meet the minimum criteria:
3. Hardware used must be drop-forged, pressed or formed steel, with corrosion resistant finish, with surfaces and edges smooth to prevent damage to the attached body harness or lanyard.
4. Vertical lifelines must have a minimum tensile strength of 2449 kg (5400 lbs.).

#### **LIFELINES MUST BE ENGINEERED TO:**

1. A minimum tensile strength capable of supporting a fall impact load of at least 2449 kg (5400 lbs.), when tying off anywhere along the length of the lifeline.



2. Lanyards must have a minimum tensile strength of 2449 kg (5400 lbs.), and recommend an energy absorbing device.
3. Body harness components must comply with respective CSA and ANSI standards.
4. Secure full body harness systems to anchorage points capable of supporting 5000 lbs.
5. Protect safety lines and lanyards against cuts or abrasion.
6. Limit the free fall distance (trough rigging) to a maximum of 1.2 meters (4 feet).
7. Only one employee may be attached to any one vertical lifeline.
8. Connect only one snap hook to any one D-ring.
9. Snap hooks must not be connected to one another.
10. Remove body harness components from service immediately if a fall or impact loading occurs.
11. Removed components may not be reused unless they are inspected by an engineer and determined to be suitable for reuse.

#### **VERTICAL LIFELINES**

1. A vertical lifeline will:
  - a) Be made of synthetic fiber rope or wire rope, and
  - b) Have a breaking strength specified by the manufacturer of at least 26.7 kn (6000 lbs.)
2. A vertical lifeline will be free of knots or splices except at its termination.
3. A termination knot or splice must not reduce the strength of the life line to less than 22 kn (5000 lbs.).

A vertical lifeline will be effectively protected at points of attachment and elsewhere, as necessary, to prevent chafing or abrasion caused by contact with sharp or rough edges.



When a tool is used that could sever, abrade or burn a lifeline, the lifeline will be protected from such abrasion or made of wire rope unless the worker is working near an energized electrical conductor or in other work where a conductive lifeline cannot be used, in which case other effective means for protection of the worker must be used.

A vertical lifeline must extend to within 1.2 meters (4 feet) of ground level or other safe lower surface.

Unless previously authorized, the suspended length of a vertical lifeline must not exceed 91 meters (300 feet) in length. A personal fall arrest system must limit the free fall of a worker to 1.2 meters (4 feet). A vertical lifeline must be installed and used in a manner that minimizes the swing-fall hazard (see attached).

Each vertical lifeline used for fall arrest must be secured to an independent point of anchorage. That anchorage must not be used to support or suspend a platform. Only one worker may be attached to any one vertical lifeline.

### **INSPECTION & MAINTENANCE**

1. Safety belts, harnesses, lanyards, lifelines, anchors and other similar devices will be :
  - a) Inspected by a qualified person on each shift before use.
  - b) Kept free from substances and conditions that could contribute to their deterioration.
  - c) Maintained in good working order.
2. A device or part that is defective in conditions that could contribute to their deterioration.
3. After any personal fall protection equipment has arrested the fall of a worker, it must:
  - a) Be removed from service.
  - b) Not be returned to service until has been inspected and re-certified for use by the manufacturer or it authorized agent, or by a professional engineer.

### **RESCUE**

An employer must develop a fall protection plan if a worker at the work site may fall 3 meters(10 Feet) or more and the worker is not protected by guardrails.



A fall protection plan must specify

- a) The fall hazards at the worksite
- b) The fall protection system to be used at the worksite
- c) The anchors to be used during the work
- d) That clearance distances have been taken into account and will not allow a worker to strike the ground or an object or level below the work area
- e) The procedures used to assemble, maintain, inspect, use and disassemble the fall protection system, where applicable, and
- f) The rescue procedures to be used if a worker falls and is suspended by a personal fall arrest system or safety net and needs to be rescued.

**Remember: Our first line of defense for Fall Protection is Guardrails. The last options, with the exception of other procedures acceptable to the responsible government Health and Safety Administration are the control zone and safety monitor system.**

### **CONTROL ZONE**

A Control Zone is a well-defined area, marked at a minimum of 2 meters (6 ½ feet) back from any leading edge. A Control Zone can be used as a temporary warning until guardrails or other fall protection is installed.

1. The width of a Control Zone must be at least 2 meters (6 ½ feet) back from the unguarded edge.
2. If workers will at all times remain further from the unguarded edge than the width of the control zone, no further fall protection need be used.
3. If a worker is working within 2 meters of the control zone a raised warning line marking the edge of the control zone is required.

The Warning Line must be:

1. A line of high visibility,
2. Or a line flagged or clearly marked with high visibility material at intervals not exceeding 2 meters (6 ½ feet).
3. Must be between 0.85 m and 1.15m (34 and 45 inches) above the working surface.
4. Additional distance must be added if the working surface is slippery sloped, the work is carried out at an elevation relative to the unguarded edge, and the risk is increased by the use of equipment near the control zone.

The use of the Control Zone is not allowed if:

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1. The working surface has a slope in excess of 4 vertical to 12 horizontal.
2. Is on a skeletal structure.
3. For installation or removal of scaffolding.

Use of a Control Zone is not permitted as the Fall Protection system when:

1. On a working surface where the shape of that surface exceeds four vertical in twelve horizontal.
2. On a skeletal structure work.
3. For scaffold erection and removal.

### **SAFETY MONITOR SYSTEM**

A safety monitor system uses a set of monitoring procedures assigned to a competent person for warning workers who are unaware of fall hazards or are acting in an unsafe manner. A safety monitor system, used in conjunction with a controlled access zone and a fall protection plan is appropriate in situations, where other options of fall protection are impractical.

The safety monitor is responsible to insure all activities performed inside the control zone are completed in accordance with the fall protection plan.

### **REQUIREMENTS**

1. The monitor must be experienced and trained.
2. Must be present whenever workers are in the control zone.
3. Must have complete authority.
4. Is not engaged in any other activities.
5. Is situated so that there is a clear view of the work being done.
6. Is able to speak to the workers in a normal voice, does not have to yell.
7. Be wearing clothing that distinguishes the monitor from other workers
8. The fall protection plan for work must specify the name of the monitor and detail their training.

### **RESPONSIBILITIES**

1. Project Superintendent/Supervisor

It shall be the responsibility of the Project Superintendent to ensure:

- a) That the Fall Protection Plan is developed on all projects under his supervision and that they meet the above policy criteria.
- b) That all workers on the project that require a Fall Protection Plan are trained in proper execution of the plan



- c) That copies of training documentation are forwarded to the Project Manager.
2. Site Safety Coordinator/Representative
- a) Ensure the training documentation is kept on file for all employees that receive Fall Protection Training.
  - b) Report to the Project Superintendent any unsafe acts or conditions relating to this policy.
3. Foreman/Supervisor/Sub-Contractors
- a) Ensure all workers under his authority receive Fall Protection training from a qualified individual.
  - b) Ensure training documentation is forwarded to the Project Superintendent.
  - c) Ensure that the required safety equipment is available.
  - d) Ensure that required safety is regularly inspected and maintained.
  - e) Provide to the Project Superintendent, an inventory of fall protection equipment available in his area of authority.
  - f) Ensure all workers under his/her authority adhere to the project Fall Protection Plan and Procedures.
4. Workers –see section 141(2) for training requirements in Alberta OH & S Act, Regulation & Code
- a) Receive training in and adhere to the project fall Protection Plan and Procedures.
  - b) Report to the Foreman/Supervisor any non-compliance of the Fall Protection Plan and Procedures.

### **DANGER AREAS**

Fall restraint equipment will be CSA and ANSI approved and will not allow the worker to reach the point of fall. Lanyards must be attached to a poured concrete portion of the site structure or to lifelines, which are attached to a poured concrete portion of the site structure. Where it is not feasible to use

“Fall Restraint” equipment in a danger area for instance, when work must be done on the unguarded edge, properly constructed scaffolding should be used.

Prefabricated scaffolding shall be erected by qualified workers and shall be erected as designed by the manufacturer. They shall not be erected with any modifications, defects, or defective parts.



Where it is not feasible to use scaffolding, “Fall Arrest” equipment may be used. “Fall Arrest” equipment shall be CSA and ANSI approved and not allow the worker to fall more than 4 feet. There can be only one worker per lanyard or safety line.

Materials and tools being stored must be 10 feet back from the edge except for tools being used and working amounts of materials. Proper lift ropes and containers are to be used for hoisting tools and equipment.

The danger zone beneath overhead workers shall be barricaded off to protect other workers and the public from the possibility of falling tools and equipment. If it is not feasible to barricade as above, a watchman/monitor will be posted.

The “Project Fall Protection Plan” shall be posted for all workers to see and should be the subject of safety meetings.

#### **PPE – CARE OF BODY BELTS, HARNESSES AND LANYARDS**

*(Taken from Canadian Center for Occupational Health and Safety, ISSN 0835-8184)*

##### **Equipment:**

1. INSPECT your equipment daily.
2. REPLACE defective equipment immediately
3. REPLACE any equipment involved in a fall. Refer any questionable defects to a trained inspector.

##### **Webbing (body belts, harness or lanyard):**

1. INSPECT entire surface of webbing for damage. Beginning at one end, bend the webbing in and inverted “U” hold the body of the belt towards you; grasp the belt with your hands six to eight inches apart
2. WATCH for frayed edges, broken fibers, pulled stitches, cuts or chemical damage. Broken webbing strands generally appear as tufts on the webbing surface.
3. REPLACE according to manufacturer’s guidelines

##### **Buckle:**

1. INSPECT for loose, distorted or broken grommets. Do not cut or punch additional holes in waist strap or strength members.
2. CHECK belt without grommets for torn or elongated holes, which could cause the buckle tongue to slip.

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3. INSPECT the buckle for distortion and sharp edges. The outer and center bards must be straight. Carefully, check corner and attached points of the center bar. They should overlap the buckle form and move freely back and forth in their sockets. The roller should turn freely on the frame
4. CHECK that rivets are tight and cannot be moved. The body side of the rivet base and outside rivet burr should be flat against the material.
5. INSPECT for pitted or cracked rivets, which indicate chemical corrosions.

**Rope:**

1. ROTATE the rope lanyard and inspect from end to end for fuzzy, worn, broken or cut fibers. Weakened areas have noticeable changes in the original rope diameter.
2. REPLACE when rope diameter is not uniform throughout.

**Hardware:**

1. INSPECT hardware for cracks and other defects. Replace the belt if the “D”- ring is not at a 90 degree angle and does not move vertically independent of the body pad or “D” saddle.
2. INSPECT tool loops and belt sewing for broken or stretched loops.
3. CHECK bag rings and knife snaps to see that they are secure and working properly. Check tool loop rivets. Check for thread separation or rotting, both inside and outside the body pad belt.
4. INSPECT snaps for hook and eye distortions, cracks, corrosion, or pitted surfaces. The keeper (latch) should not be distorted or obstructed. The keeper spring should exert sufficient force to close the keeper firmly.

**Safety Strap Inspection:**

1. Basic care prolongs the life of the unit and conditions to its performance.
2. Keep DRY belt and other equipment away from heat, steam and out of long periods of sunlight.
3. STORE in a clean, dry area, free of fumes, sunlight or corrosive materials.

**Nylon and Polyester:**

1. WIPE off all surface dirt with a sponge dampened in plain water. Rinse sponge and squeeze it dry.  
Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thicker lather with a vigorous back and forth motion.
2. RINSE webbing in clean water.
3. WIPE the belt dry with a clean cloth. Hang freely to dry, but away from excessive heat.



**Cotton**

CLEAN like nylon. For heavy dirt or grease, soak belts in a solution of one tablespoon of grease cutter to one gallon of water. Consult supplier. After soaking, rinse again; then hang to dry.

Senior Administration

Jason De Boer \_\_\_\_\_ Date \_\_\_\_\_ 2015

Paul Wolff \_\_\_\_\_ Date \_\_\_\_\_ 2015



## FALL PROTECTION WORKPLAN

1. Project: \_\_\_\_\_

2. Location: \_\_\_\_\_

3. Job #: \_\_\_\_\_

4. Effective Dates: \_\_\_\_\_

5. Description of work to be done: \_\_\_\_\_

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6. Hazards

7. Max Fall Distance: \_\_\_\_\_

8. Clearance Distance Calculation:

*Connector Length + Height of Worker + Shock Absorber Extension + Safety Factor(3 ft.)*

9. Weather: Cold / Heat / Wind / Rain / Snow / Ice / Mud / Thunder Storm / Not Applicable(Indoors)  
(Circle appropriate condition)

10. Other (Describe): \_\_\_\_\_

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## 11. Controls – Fall Protection Equipment List

(list all equipment. Include the make and model and type of equipment i.e Harness, Lanyard, Retractable )

[illegible]

12. Describe the Anchors to be used during this task:

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13. Do the conditions of nature of this task require any special procedures that must be used for the assembly/disassembly of the fall protection system. If yes please describe:

[illegible]

