



Working at Heights

Document Number: RGS0024A	Standard Area: Regional Wood Buffalo	Facility: Regional Wood Buffalo
Revision Date: 2015/11/23 Revision: 1 Review Cycle: 3 Years		Applies To: All Workers
Document Owner (Title): General Manager, EH&S Upstream		

Summary of Changes

Rev No.	Section Changed	Revisions Made
1		New Document

Scope

All Suncor employees, contractors, suppliers, vendors and visitors must follow the information in this document at all work areas and when performing any work activities where a worker may sustain injury due to a fall from an elevated height if:

- the worker could fall 1.8 metres or more
- a worker could fall less than 1.8 metres but there is an unusual risk of injury
- a worker could fall into or onto a hazardous substance or object, or through an opening in a work surface.

Purpose

Read and understand this document to protect yourself and other workers from the risk of falls from elevated work areas through proper use of fall prevention and protection systems.



**Protect yourself
against a fall when
working from heights**

Compliance

This document covers Fall Prevention and Protection, including the hierarchy of controls, travel restraints, fall arrests and components (starting on page 7), and fall protection planning (page 14).

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Roles and Responsibilities

The following individuals and groups have the following roles and responsibilities:

Document Owner

- Ensures this document is reviewed according to the required revision cycle.
- Ensures the document is updated to accommodate changes to Suncor, provincial, and federal regulation with alignment to the OSHA Working at Heights RCOP.
- Ensures the document is updated to mitigate risks found as the result of an incident.

Document Approver

- Ensures this standard is necessary and that it aligns with management and company direction.

Business Area (BA) Senior Management

- Ensure adequate resources/funding for fall protection systems are included in the design engineering of new facilities and for hazard assessment, needs analysis and development of fall protection plans, rescue plans and procedures where the risk of fall hazard to a worker is greater than 1.8 metres or from a lesser height where there is an unusual risk of hazard.

- Ensure design, installation, and construction of new or replacement structures, buildings and equipment integrate elevated work platforms, scaffolds or temporary work platforms to minimize potential fall hazards to workers.

When application of these measures are impractical, an engineered fall protection system(s) must be made available and used. Engineered systems include accommodation for fixed anchorage points and/or systems for horizontal lifelines, life safety rope (vertical lifelines) and other suitable fall protection equipment for workers that risk a fall of 1.8 metres or more and are not protected by guardrails.

- Ensure hierarchy of controls for fall protection is applied when mitigating or eliminating the risk posed by working at heights.
- Ensure the business area adheres to the work practices detailed in this document.
- Approve administrative procedures used in place of fall protection systems before the work has started.
- Monitor compliance with fall protection standards during their routine walkabouts, workplace observations and planned inspections with formal evaluations conducted periodically.

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Roles and Responsibilities *Continued***BA Mid-Level Management**

- Ensure design, installation and construction of new or replacement structures, buildings and equipment integrate elevated work platforms, scaffolds or temporary work platforms to minimize potential fall hazards to workers.
When application of these measures is impractical, an engineered fall protection system(s) must be made available and used. Engineered systems include accommodation for fixed anchorage points and/or systems for horizontal lifelines, life safety rope (vertical lifelines) and other suitable fall protection equipment for workers that risk a fall of 1.8 metres or more and are not protected by guardrails.
- Ensure hierarchy of controls for fall protection is applied when mitigating or eliminating the risk posed by working at heights.
- Ensure tasks are analyzed to ensure methods are put into place for the elimination or control of fall hazards.
- Ensure fall protection plans are put in place before work begins where workers are working at or above 1.8 metres with engineered systems described above.
- Ensure suitable inspection and maintenance procedures are established for all engineered systems and fall protection systems equipment.
- Ensure personnel using or performing the following have appropriate levels of training:
 - Use of fall protection equipment / systems (as per Part 9 of the current Alberta Occupational Health and Safety Code or the Oil Sands Safety Association (OSSA) Fall Protection safety training certification, including workers who may use elevating devices such as aerial lifts or scissor lifts.
 - Supervise users of fall protection equipment and systems.
 - Inspect and maintain fall protection equipment and systems.
 - Develop fall protection plans and procedures.
 - Assemble, disassemble, inspect and recertify fall protection systems and equipment.
- Ensure all contractors and their employees follow the guidelines established by OSSA Fall Protection safety training certification requirements.
The Risk Management Learning Centre Fall Protection training meets or exceeds the requirements of the Oil Sands Safety Association (OSSA) Fall Protection Training Standard.
- Monitor compliance with fall protection standards during routine walkabouts, loss control tours and planned inspections with formal evaluations conducted periodically.
- Ensure process/systems are developed and in place to ensure the optimal use of fall protection systems, adequate supply of and access to fall protection equipment.
- Frequently assess the need for permanent platforms when scaffolds are used to access the same point or equipment.
- Develop suitable monitoring system for the verification of adequate training and the competency of workers using fall protection.

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Roles & Responsibilities *Continued***Frontline Leaders**

- Ensure workers are trained in the use of fall protection equipment and systems as per Part 9 of the current Alberta Occupational Health and Safety Code or the OSSA Fall Protection safety training certification.
- Ensure the hierarchy of controls for fall protection is applied when mitigating or eliminating the risk posed by working at heights.
- Ensure affected workers are involved in hazard assessment, control or elimination of hazards identified in the fall protection plan.
- Ensure the fall protection plan is updated when conditions affecting fall protection change.
- Ensure suitable inspection and maintenance procedures are established for all engineered systems and fall protection systems equipment.
- Ensure applicable inspections are conducted and maintenance procedures are followed for all engineered systems and fall protection systems equipment.
- Ensure equipment selected is appropriate for the specific application and will prevent workers performing tasks at elevated work areas from contacting the surface below the work area or any obstacles beneath the work area, should a fall occur.
- Ensure all components of a fall protection system are compatible with one another and the environment in which they are used.
- Ensure a competent worker inspects all scaffolds and work platforms before use.
- Develop a fall protection plan through the use of a hazard analysis method (such as Job Hazard Analysis (JHA)/Job Safety Analysis (JSA)) with regard to activities and conditions that may expose workers to a fall hazard.
- Make the fall protection plan available at the work site and review it with workers before work with a risk of falling begins.
- Put adequate escape and rescue plans in place for the work involving fall protection systems.
- Ensure each worker inspects the fall arrest equipment as required by the manufacturer before it is used on each work shift.
- Ensure fall arrest equipment is kept free from substances and conditions that could contribute to deterioration of the equipment and equipment is recertified as specified by the manufacturer.
- Remove from service any fall arrest equipment found or identified as damaged or defective, or involved in a fall event.
- Ensure equipment is not returned to service until recertified by the manufacturer or professional engineer; or if not recertified that it is destroyed.
- Monitor compliance with fall protection standards during routine walkabouts, loss control tours and planned inspections with formal evaluations conducted periodically.
- Frequently assess the need for permanent platforms when scaffolds are used to access the same point or equipment.

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Roles & Responsibilities *Continued***Workers**

- Successfully complete Risk Management Learning Center Fall Protection Training (Suncor staff) or Oil Sands Safety Association (OSSA) approved training course (contractors).
- Use or wear the required fall protection system to prevent contact with the surface below where you are working and be in compliance with current OHS Code.
- Participate in fall protection hazard assessment and control planning.
- Conduct pre-use visual inspections before using fall protection systems or equipment.
- Do not use a damaged anchor until it has been replaced or repaired and recertified by the manufacturer or professional engineer.
- Keep equipment free from substances and conditions that could contribute to deterioration of the equipment and properly store equipment when it is not in use.
- Identify, remove from service, and report to the supervisor any fall arrest equipment found defective or involved in a fall event.
- Keep lanyards, in combination with anchor selection, as short as possible to reduce free fall distance and potential arresting forces should a fall occur.
- Immediately report all incidents and unmitigated hazards to the supervisor.
- Select equipment and anchors that will prevent contact with the surface below the work area or obstacles beneath the work area, should a fall occur.

Director, Health & Safety (EH&S)**Emergency Services Management**

- Responsible for endorsing any administrative procedure in place of a fall protection system before the work is started.
- Ensure Emergency Services personnel have the necessary training for fall rescue operations.
- Ensure equipment such as high angle rescue equipment to perform fall rescue operation rescues is readily available.
- Ensure procedures or work practices are in place for rescue operations.

References

- OSSA Fall Protection Safety Training Certification <http://www.ossa-wb.ca>
- OSSA Working at Heights RCOP
- [Alberta Occupational Health and Safety Act](#)
- CAN Standards and Canadian Standards Association (CSA) Standards
- American National Standards Association (ANSI)/ASSE Standards
- CEN (European Committee for Standardization) Standards
- [MKMC0018A Fall Protection Plan Checklist](#)
- [MKMC0019A Fall Protection Plan](#)

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Terms, Definitions and Acronyms The following terms, definitions and acronyms are used in this standard:

Control Zone	<p>An approach to fall protection that places special requirements on workers and work being performed on a nearly level working surface within 2 metres of an unguarded edge from which a worker could fall. Control zones can be used on surfaces having a slope of up to 4 degrees measured from the horizontal.</p> <p>If a worker works within 2 metres of the controls zone i.e. within 4 metres of the unguarded edge, a raised warning line or equally effective means is required to alert the worker. If a worker works within the control zone, a travel restraint system must be used.</p> <p>A control zone cannot be used if the level working surface on which the work is being performed is less than 4 metres wide.</p>
Engineered Fall Protection System	<p>A fall protection system integrally engineered into the design of a structure or equipment in order to reduce or eliminate a fall hazard. An example may include a horizontal life line system or accommodation for fixed anchorage for a personal fall arrest systems.</p>
Fall Arrest System	<p>An assembly of components that will arrest a worker's fall when properly assembled, used together and when connected to a suitable anchorage.</p>
Fall Arresting Device	<p>Part of a worker's personal protective equipment that stops the worker's fall and does not allow the worker to fall farther.</p>
Fall Protection System	<ul style="list-style-type: none"> • A personal fall arrest system • A travel restraint system • Fabric or netting panels intended for leading edge protection • A safety net • A control zone • Use of procedures in place of fall protection equipment • Another system approved by the Director of Inspection.
Free Fall Distance	<p>The vertical distance between the point from which a worker falls to the point at which deceleration begins because of the action of a personal fall arrest system.</p>
Personal Fall Arrest System	<p>Personal protective equipment that will stop a worker's fall before the worker hits a surface below.</p>
Professional Engineer	<p>A person who holds a certificate of registration to engage in the practice of engineering, geology or geophysics under the Engineering, Geological and Geophysical Professions Act and is a member or licensee in good standing of the Association of Professional Engineers and Geoscientists of Alberta(APEGA).</p>

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Terms, Definitions & Acronyms *Continued***Travel Restraint System**

A type of fall Protection System, including guardrails or similar barriers, that prevents a worker from traveling to the edge of a structure or to a work position from which the worker could fall.

Unusual Risk of Injury

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. This could include a water or electrical danger.

Exemptions

- Any exemption to this standard must have an approved Technical Deviation in place.
- If a Technical Deviation is in place, all workers must review the Technical Deviation as part of the pre-job planning. A Field Level Hazard Assessment must be completed identifying the hazard related to working at heights and mitigating controls that are in place and signed off by all workers participating in the job activity.
- Suncor Emergency Services personnel and Electrical Distribution and Transmission personnel may be exempt from sections of this standard due to alternate equipment use and practices specifically related to their duties.

Standard**1. Fall Protection Risk Management**

Item	Description
1.1	Use fall protection to reduce the risk, when: <ul style="list-style-type: none"> • working at a height of 1.8 metres or more • where a fall could result in an unusual risk of injury • you could fall into or onto a hazardous substance or object • you could fall through an opening in a work surface.
1.2	The fall protection used depends on the work being done. Understand the information in this section so you know the best method and proper use of fall protection. Obtain adequate training on fall protection.
1.3	Never work alone when working at a height of 1.8 metres or more or where the fall protection system could allow a fallen worker to be suspended. This is because of the health hazards of suspension trauma.
1.4	This requirement does not apply to work done: <ul style="list-style-type: none"> • on a platform or a scaffold with guardrails in place where no other means of fall protection is required. • where you are using a travel restraint system to prevent a fall from height.
1.5	Worker must be in direct communication with another worker, team leader or supervisor. Using a radio or cell phone does not satisfy the direct communication requirement, since these devices can slip away from a worker during a fall.

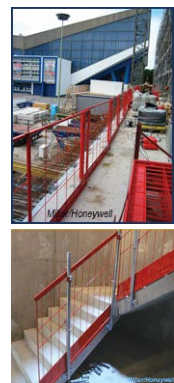
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2. Know the Hierarchy of Controls for Fall Protection

Item	Description
2.1	If possible, eliminate the hazard by working on the ground. If that is not possible, use this hierarchy of controls to decrease the risks.
2.2	The preferred application is to eliminate the risk by using a permanent or temporary guardrail system. Permanent work platforms with guardrails must be in place around the work area if there is a possibility for the worker to fall a vertical distance of more than 1.2 metres and less than 3 metres in accordance with the current Alberta Occupational Health and Safety Code.
2.3	When planning work activities where permanent guardrails are not in place and a worker is required to perform tasks at elevated work areas, use temporary work platforms with guardrails.
2.4	If the use of permanent or temporary guardrails is not possible, use a travel restraint or work positioning system to act as a personal fall arrest system to prevent the worker from approaching a fall hazard.
2.5	If a travel restraint or work positioning system is not reasonably possible, workers must use a personal fall arrest system consisting of an anchorage point, lanyard with shock absorber, or retractable lifeline device and a full body harness. Also consider using a vertical life safety rope and rope grab, and engineered horizontal life line, if applicable.
2.6	If it is not reasonably possible to use any of the above systems, develop administrative procedures. Important: A formal hazard assessment must be completed and be approved by the area Cross Function Team and endorsed by the Director of EH&S before using the developed administrative procedures.
2.7	Always limit the number of workers working at height.

3. Understand Travel Restraint Requirements

Item	Description
3.1	Travel restraint systems use a full body harness and lanyard that attaches the worker to an appropriate anchor which will prevent the worker from approaching a fall hazard.
3.2	An appropriate travel restraint anchor must have a minimum breaking strength of at least 3.5 kilonewtons (kN) for each attached worker in any direction in which the load may be applied.



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- | Item | Description |
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| 3.3 | Safety belts, which are body supports consisting of a strap with a means for securing it about the waist and attaching it to other components, must not be used in place of a full body harness. |
| | Note: There is an exception allowed for Suncor Transmission and Distribution linemen personnel for use of linemen's body belt. |

4. Fall Arrest Requirements

- | Item | Description |
|------|---|
| 4.1 | If using a fall arrest system, make sure the worker cannot hit: <ul style="list-style-type: none"> • The ground • Any object which poses an unusual possibility of injury • A level below the work area. |
| 4.2 | Fall equipment selection must limit the maximum arresting forces on a worker to 6 kN unless the worker is using an E6 type shock absorber, in accordance with the manufacturer's specifications, in which the maximum arresting force must not exceed 8 kN. |
| 4.3 | An E6 type Shock Absorber is designed for a person with tools weighing between 200 lbs to 386 lbs It limits the arresting force to 6 kN (1,350 lbs) under normal circumstances, allowing it to increase to 8 kN (1,800 lbs) when the shock absorber is wet and frozen. |
| 4.4 | A fall arrest system without a shock absorber must limit the free fall distance to 1.2 metres. |
| 4.5 | Fall arrest equipment and anchor selection must always minimize the free fall distance, which will in turn result in reduction of maximum arrest forces on the worker should a fall occur. |
| 4.6 | A worker must use the shortest length of lanyard that still allows the worker to perform the work safely. The lanyard should be attached to an anchor no lower than the worker's shoulder height. If anchor at shoulder height is not available, the lanyard must be secured to an anchor point as high as reasonably possible. |
| | Note: Securing a lanyard at foot level is dangerous. If a fall occurs the shock absorber may fully extend without absorbing all of the energy of the fall, exceeding the maximum arresting forces and potentially causing serious injury to the worker. |
| 4.7 | If the above considerations cannot be met, a re-evaluation of equipment selection must be conducted. See the Fall Arrest System components in section 5 for more information. |



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5. Understanding Fall Arrest System Components

Item	Description
5.1	<p>A Fall Arrest System is an active protective system only coming into service when a fall occurs. It consists of at least:</p> <ul style="list-style-type: none">• An anchorage• A connecting subsystem• A harness (Personal Protective Equipment). <p>It may also include lanyard, shock absorbers, horizontal lifelines, vertical lifelines or a combination of these.</p>
5.2	<p>Manufacture of fall protection components must be approved by:</p> <ul style="list-style-type: none">• CSA Standard Z259.2.1-98 (R2004), <i>Fall Arresters, Vertical Lifelines, and Rails</i>• (ANSI)/ASSE Standard Z359.1-2007, <i>Safety requirements for personal fall arrest systems, subsystems and components</i>• CEN Standard EN 353-2:2002, <i>Personal protective equipment against fall from a height – Part 2: Guide type fall arrestors including a flexible anchor line</i>

6. Anchorage

Item	Description
6.1	<p>An anchorage is a structure, or part of a structure, that is capable of safely withstanding any potential forces applied by a fall protection system.</p>
6.2	<p>Travel restraint and fall arrest systems and devices (static lines, retractable lanyards and safety nets) must have adequate anchorage points.</p>
6.3	<p>When using a fall arrest system:</p> <ul style="list-style-type: none">• Attach lanyard to a structural member (I-beams or concrete beams) or other fixed point (such as a welded supports or decking).• Secure lanyard or safety strap to an anchor point no lower than the worker's shoulder height unless a shoulder height anchor point is unavailable. In that case, secure the lanyard or safety strap to an anchor point as high as reasonably possible.• Do not use handrails and pipes as anchorage points.• Do not attach personal fall arrest system anchor points to any part used to support or suspend a platform.

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7. Anchorage Design Characteristics

Item	Description
7.1	Manufacturers and engineers must design anchor systems to meet safety standards. If using a permanent travel restraint anchor system, it must meet the requirements for anchor systems for fall arrest.
7.2	The commonly regulated minimum strength for a vertical personal anchorage point is 16 kN or 2 times the maximum arrest force per worker attached.
7.3	The minimum strength for a horizontal anchor point varies depending on the type of system. Follow the manufacturer's or engineer's design requirements.

8. Anchorage Connectors

Item	Description
8.1	Anchors are an engineered component for attaching fall arrest or travel restraint systems to an anchorage. Some examples of anchor components are load-rated eyebolts, steel cable slings, tripods or davit arms.



Caution: Eyebolts of small diameters can cause a roll-out of the snap hook. Do not connect a lanyard around an anchor point and back on itself with its snap hook.

Caution: When using a wire rope sling as an anchor, terminate it at both ends with a Flemish eye splice rated to at least 90% of the wire rope's minimum breaking strength.

9. Characteristics – Anchor Strength – Permanent

Item	Description
9.1	The permanent anchor must be capable of safely withstanding the impact forces applied to it. Its minimum breaking strength with an attached worker must be 16 kN or 2 times the maximum arresting force in any direction in which the load may be applied.

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Item	Description
9.2	This does not apply to anchors installed before July 1, 2009 nor does it apply to the anchors of flexible horizontal lifeline systems that must meet requirements of the specific directives for installation of horizontal lifeline systems.
9.3	The anchor must be rated at 2 times the maximum arresting force and must be designed, installed and used according to the manufacturer's specifications or specifications certified by a professional engineer.

10. Characteristics – Anchor Strength – Temporary Travel Restraint System



Item	Description
10.1	The temporary anchor used in a travel restraint system must: <ul style="list-style-type: none"> • have a minimum breaking strength of at least 3.5 kN per attached worker in any direction in which the load may be applied • be installed, used and removed according to the manufacturer's specifications or specifications certified by a professional engineer • be permanently marked as being for travel restraint only • be removed from use on the earliest of: <ul style="list-style-type: none"> • the date on which the work project for which it is intended is completed, or • the time specified by the manufacturer or professional engineer.

11. Characteristics – Anchor Strength – Temporary Personal Fall Arrest System

Item	Description
11.1	The temporary anchor used in a personal fall arrest system must: <ul style="list-style-type: none"> • limit the free fall distance, which will also reduce the maximum arrest forces on the worker, if a fall occurs • have a minimum breaking strength of at least 16 kN or 2 times the maximum arresting force per attached worker in any direction in which the load may be applied • be installed, used and removed according to the manufacturer's specifications or specification certified by a professional engineer • Be removed from use on the earliest of the date on which the work project for which it is intended is completed, or the time specified by the manufacturer or professional engineer.

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12. Connecting Subsystems and Personal Protective Equipment



Item	Description
12.1	<p>All connecting components, such as carabiners, D-rings, O-rings, oval rings, self-locking connectors and snap hooks, manufactured on or after July 1, 2009 must be approved as applicable to:</p> <ul style="list-style-type: none"> • CSA Standard Z259.12-01 (R2006), Connecting Components for Personal Fall Arrest Systems (PFAS) • ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components • CEN Standards EN 362:204, Personal protective equipment against fall from a height – Connectors • CEN Standard 12275: 1998, Mountaineering equipment – Connectors – Safety requirements and test method
12.2	<p>The following components make up the remainder of travel restraint and fall arrest systems.</p>
Snap Hook	<p>12.3 This self-locking connector consists of a hook-shaped body with a normally closed gate (or similar arrangement) that may be opened to receive an object. When released, it automatically closes and locks to retain the object.</p>
	
	<p>12.4 A snap hook must have a self-locking keeper that remains closed and locked until at least 2 consecutive manual actions intentionally unlock and open it for disconnection only. This prevents accidental roll-outs. The snap hook must be marked with its breaking strength in the major axis, the name or trademark of the manufacturer.</p>
Carabiner	<p>12.5 A carabiner is a connecting component, generally trapezoidal or oval shaped, with a normally closed gate or similar arrangement and an ultimate tensile strength of at least 22.2 kN.</p>
	
	<p>12.6 The gate may be opened to permit the body to receive an object and, when released, automatically closed to retain the object.</p>
	<p>12.7 A carabiner must have a self-locking keeper that remains closed and locked until at least 2 consecutive manual actions intentionally unlock and open it for disconnection only.</p>
Cable or Rail with a Rope Grab	<p>12.8 A rope grab is a device that travels along a lifeline and will lock onto it in a fall. This is a mechanical fall arrest device attached to a vertical cable lifeline or rail system that locks itself as fall occurs. It is normally used on a fixed ladder system that is not equipped with appropriately spaced rest platforms.</p>

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	Item	Description	
Lanyard	12.9	This flexible line of rope, wire rope, webbing or synthetic rope or strap is used to secure a full body harness or safety belt to a lifeline or anchor point. It generally has a connector at each end for connecting the body harness to a fall restraint or arresting device, shock absorber, anchorage connector or anchorage.	
	12.10	A worker must use the shortest length of lanyard that still allows the worker to perform the work safely.	
	12.11	Attach the lanyard to an anchor no lower than your shoulder height. If this requirement cannot be met, re-evaluate the equipment selection. Securing a lanyard at foot level is dangerous because, if a fall occurs, the shock absorber may fully extend without absorbing all of the energy of the fall, potentially causing serious injury to the worker.	
	12.12	Lanyards manufactured on or after July 1, 2009 are approved to: <ul style="list-style-type: none"> • CSA Standard Z259.11-05, Energy absorbers and lanyards • ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components • CEN Standard EN 354:2002, Personal protective equipment against falls from a height – Lanyards 	
	12.13	If the work area uses a tool or corrosive agent that could sever, abrade or burn a lanyard, the lanyard used by the worker must be made of wire rope or other material appropriate to the hazard.	
	12.14	Despite above statement, if a worker works near an energized conductor or in a work area where a lanyard made of conductive material cannot be used safely, the worker must use another effective means of fall protection.	
Shock Absorbers (Deceleration Devices)	12.15	A shock absorber slows and cushions the fall by reducing the force of the fall. When using a wire rope lanyard for fall arrest, a personal shock absorber must be incorporated as part of the personal fall protection system in order to keep the arresting force at a safe level.	
	12.16	This component's primary function is to dissipate energy and limit deceleration forces that the system imposes on the human body and anchor during fall arrest. Such devices may employ various principles such as deformation, friction, tearing of materials or breaking of stitches to accomplish energy absorption.	
	12.17	The worker must attach a shock absorber between the full body harness D-ring and the vertical anchorage point.	

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Item	Description
12.18	<p>The shock absorber must be approved to the following standards if manufactured on or after July 1, 2009:</p> <ul style="list-style-type: none"> • CSA Standard -Z259.11-05, Energy absorbers and lanyards • ANSI/ASSE Standard Z359.1-2007, Safety requirements for personal fall arrest systems, subsystems and components • CEN Standard EN 355:2002, Personal protective equipment against falls from a height – Energy absorbers <p>Note: If the personal fall arrest system is arranged so that a worker cannot hit the ground, an object which poses an unusual possibility of injury, or a level below the work area, then the personal fall arrest system does not have to include a shock absorber or similar device. However, a shock absorber is required with a fixed ladder fall arrest system only if it is required by the manufacturer of the system.</p>
Full Body Safety Harness	<p>12.19 This is a body support consisting of connected straps designed to distribute force over at least the thighs, shoulders and pelvis to which a lanyard or lifeline or connecting components can be attached.</p>
	
	<p>12.20 Workers must wear a full body harness as part of a personal fall arrest system.</p>
	<p>12.21 Manufacturers design a harness to support the user during work activities or during and after the arrest of an accidental fall, depending on the harness.</p>
	<p>12.22 Various types of harnesses are available for special operations such as confined entry and rescue operations.</p>
	<p>12.23 Safety harnesses manufactured on or before July 1, 2009 must be approved to:</p> <ul style="list-style-type: none"> • CSA Standard CAN/CSA-Z259.10-06-<i>Full Body Harnesses</i> • ANSI/ ASSE Standard Z359.1-2007, <i>Safety requirements for personal fall arrest systems, subsystems and components</i> • CEN Standard EN 361: 2007, <i>Personal protective equipment against falls from a height – Full body harnesses</i>
Self - Retractable Devices	<p>12.24 A retractable lifeline is a device containing a drum-wound line that may be slowly extracted from, or retracted onto, the drum under slight tension during normal movement by the user.</p>
	

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Item	Description
12.25	The line can attach to the fall arrest attachment on the body support. If the user falls, the device automatically locks the drum and arrests the fall. The device may have an integral means for energy absorption.
12.26	All retractable devices manufactured on or after July 1, 2009 and used with a personal fall arrest system must be: <ul style="list-style-type: none"> • Approved to CSA Standard Z259.2.2-98 (R2004) Self- Retracting Devices for Personal Fall Arrest Systems • Anchored above the worker's head, unless the manufacturer's specifications allow the use of a different anchor location • Be used in a manner that, if a worker falls, it minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres.
Life Safety Rope	12.27 A lifeline or life safety rope is a length of synthetic or steel wire rope attached to an independent point of anchorage. It is rigged from one or more anchor points to which a worker's lanyard or other part of a personal Fall Arrest System is attached.
	12.28 This rope must be manufactured on or after July 1, 2009. For use in a fall protection system, it must: <ul style="list-style-type: none"> • Be approved to: <ul style="list-style-type: none"> • NFPA Standard 1983, <i>Standard on Life Safety Rope and Equipment for Emergency Services</i>, 2006 Edition, as light-use or general-use life safety rope • CEN Standard EN 1891 : 1998, <i>Personal protective-equipment for the prevention of falls from a height – Low stretch kernmantle ropes, as Type A rope</i> • Meet the requirements of: <ul style="list-style-type: none"> • CSA Standard CAN/CSA-Z259.2.1-98 (R2004), <i>Fall Arresters, Vertical Lifelines, and Rails</i> • ANSI/ASSE Standard Z39.1-2007, <i>Safety requirements for personal fall arrest systems, subsystems and components</i> <p>Note: The life safety rope used in a fall protection system must:</p> <ul style="list-style-type: none"> • Extend downward to within 1.2 metres of ground level or another safe lower surface • Be kept free of knots or splices throughout the travel portion, except for a stopper knot at its lower end • Be effectively protected to prevent abrasion by sharp or rough edges • Be made of material appropriate to the hazard and able to withstand adverse effects • Be installed and used in a manner that, if a worker falls, it minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres.

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	Item	Description	
Horizontal Lifelines	12.29	This is a system composed of a synthetic or wire rope, secured horizontally between 2 or more anchor points, to which a worker attaches a personal fall arrest system or travel restraint system. The horizontal lifeline connects other components of a personal fall arresting system to the anchorage.	
	12.30	Horizontal lifelines must meet CSA Standard Z259.13-04 Flexible Horizontal Lifeline Systems or <i>the applicable requirements of CSA Standard Z259.16-04, Design of Active Fall-Protection Systems.</i>	
	12.31	Temporary horizontal lifelines must be a wire rope with a diameter of at least 12 mm and a nominal breaking load specified by the manufacturer of at least 89 kN.	
	12.32	The connecting hardware (shackles and turnbuckles) must have an ultimate tensile strength of at least 71 kN; end anchors must have an ultimate load capacity of not less than 71 kN. The span must be not less than 6 metres and not more than 18 metres with the elevation of the line of at least 2 metres above the working surface.	
Energy Absorbers	12.33	This component's primary function is to dissipate energy during a fall and limit deceleration forces that the vertical or horizontal lifeline systems impose on the number of human bodies and the system's anchorage.	
	12.34	Such devices may employ various principles, such as deformation, friction, tearing of materials or breaking of stitches to accomplish energy absorption. It must meet the requirements of: <ul style="list-style-type: none"> • CSA Standard Z259.11-05 (Energy absorbers and lanyards) • ANSI/ASSE Standard Z359.1 -2007 (Safety requirements for personal fall arrest systems, subsystems and components) • CEN Standard EN 355:2002 (Personal protective equipment against falls from a height – Energy absorbers) 	

13. Connecting Subsystems and Personal Protective Equipment

Item	Description
13.1	When it is not reasonably possible to use one of the fall protection systems noted above; you can use a procedure in place of fall protection equipment.

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Item	Description
13.2	<p>When using procedures in place of fall protection equipment, area management must ensure that all of the following conditions have been met:</p> <ul style="list-style-type: none"> • A hazard assessment is completed before the work at height begins • The procedures are in writing and available to the workers before they begin • The procedures are being followed while performing the work • The work is performed in a way that minimizes the number of workers exposed to a fall hazard while work • The work is limited to light duty tasks of limited duration • The worker performing the work is competent to do it • When used for inspection, investigation or assessment activities, these activities take place before the actual start of work or after the work has been completed • The procedures do not expose a worker to additional hazards.
13.3	<p>The Area Cross Functional Team must approve any administrative procedure that will be used in place of fall protection and the Director of EH&S must endorse it <i>before</i> a worker uses the procedure.</p> <p>If working above 1.8 metres a procedure can only be used in the following situations:</p> <ul style="list-style-type: none"> • Installation or removal of fall protection equipment • Roof inspection • Emergency repairs • At-height transfers between equipment and structures if allowed by the manufacturer's specifications • Situations where a worker must work on top of a vehicle or load and these requirements have been met: • All steps have been taken to eliminate or reduce the need for a worker to climb onto the vehicle or its load • The load is secured against movement. <p>Note: The option of using an administrative procedure is not intended to allow an employer or worker to avoid using a fall protection or some type of elevated work platform just because doing so may be inconvenient or take more time than using an administrative procedure.</p>

14. **Fall Protection Planning**

Item	Description
14.1	<p>Fall protection plans must be developed whenever:</p> <ul style="list-style-type: none"> • A worker may fall a distance of 1.8 metres or more • The workers are not protected by guardrails • There is an unusual risk of injury should a worker fall.

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Item	Description
14.2	A single fall protection plan can be applicable to all the work sites if the same fall hazards exist at multiple work sites and the fall protection equipment and rescue procedures are identical at each work site. Alternatively, an employer can create a single fall protection plan that covers all of the fall hazards likely to be encountered during normal operations. However, if a unique work situation arises, you must create a fall protection plan for the work.
14.3	The applicable fall protection plan must be available at the work site. Frontline supervisors must review it with workers before work with a risk of falling begins.
14.4	A fall protection plan is not necessary for permanent work areas equipped with guardrails, and situations involving use of a boom supported elevating work platform or use of a fork mounted elevating work platform intended to support a worker. These situations leave no choice as to the means of fall protection, and the rescue of a worker on the platform is generally straightforward — the platform can simply be lowered.
14.5	A fall protection plan is required if a travel restraint system is being used. Rescue procedures are not necessary in this case since a worker will not fall and be left suspended in the air.
14.6	A fall protection plan must specify: <ul style="list-style-type: none">• Fall hazards• Types of fall protection systems to be used at the work site• Anchors to be used during the work• Instructions and procedure for workers on how to assemble, maintain, inspect, use and disassemble the fall protection systems (where applicable)• That clearance distance requirements below the work area, if applicable, have been confirmed as sufficient to prevent a worker from striking the ground or an object or level below the work area• Instructions and rescue procedures on how to rescue a worker who has fallen and cannot initiate self-rescue. <p>Note: See Appendix A for the sample form of a blank Fall Protection Plan.</p>
14.7	Suspension trauma or orthostatic incompetence is an effect which occurs when the human body is held upright without any movement for a period of time (such as a fallen worker suspended in a full body harness). Since this can cause serious issues in a short period of time, reduce this risk by using the buddy system when working at a height where suspension trauma could occur.

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15. Elevating Device Requirements

Item	Description
15.1	When using an Elevated Work Platform such as man-lifts, man-baskets and aerial lifts and scissor lifts to perform work at heights, you must have sufficient training, experience, and follow safe work practices.
15.2	When working with these types of devices, workers must: <ul style="list-style-type: none">• Wear a personal fall arrest harness that is securely attached to the lift device at a manufacturer's approved attachment point. If no anchor is specified by the manufacturer, an anchor point is to be certified by a professional engineer that meets the requirements of CSA Standard Z259.16-04 (R2009), Design of Active Fall-Protection Systems.• When a lanyard is connected to the anchor, if reasonably possible, ensure it is short enough to prevent the worker from being ejected but also long enough to allow the worker to perform his or her work.• Ensure that fork mounted man-lifts are either commercially manufactured or certified by a Professional Engineer and that the operator of the forklift remains at the controls while the worker is in the lift.• Ensure they do not travel in a bucket, basket or platform that is moving on a road or worksite if the road conditions, traffic or overhead obstructions may present a danger to the worker.

16. Fixed Ladders and Climbable Structures

Item	Description
16.1	A worker ascending or descending a fixed ladder is not required to wear fall protection. However, the worker must use a fall protection system if the worker stops on the ladder to work (for example to take measurements, operate a valve, open a hatch, paint a surface, etc.) and can fall a distance of 1.8 metres or more.
16.2	A ladder cage is a permanent structure attached to a ladder to provide a barrier between the worker and the surrounding space. It serves to support a worker if the worker needs to rest against a barrier. A ladder cage is not a type of fall protection.
16.3	A climbable structure is an engineered or architectural work where the primary method of access to the structure is by climbing the structure and the principle means of support is the climber's hands and feet. Examples of climbable structures include power transmission towers, communication towers, and large units of powered mobile equipment. Due to the variety of structure climbing access techniques and the associated hazards, it is essential that a worker be given sufficient instruction on the skills required to safely access a structure.
16.4	A worker climbing, working, resting, transitioning between work and rest positions or transferring from one distinct structure to another on a climbable structure needs to use an appropriate fall protection system that provides the worker with continuous fall protection.

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Item	Description
16.5	If a worker may have to climb onto a vehicle or load at any location where it is not reasonably possible to provide a fall protection system, management must take all steps possible to reduce the need for the worker to climb onto the vehicle or its load, and a procedure must be in place that meets the requirements of section 4.0 of this Standard.

End of Standard

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Appendix A – Sample Blank Fall Protection Plan

A Fall Protection Plan ([MCMC0019A](#)) and Fall Protection Plan Checklist ([MKMC0018A](#)) are available in Livelink

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Figure 1: Page 1 of a Sample Fall Protection Plan

		
Sample of Blank Fall Protection Plan (pg 1 of 2)		
1. Potential Fall Hazards - fall from or into:		
<input type="checkbox"/> Scaffold Erection/Dismantle	<input type="checkbox"/> Protruding objects	<input type="checkbox"/> Hazardous Processes/Equipment
<input type="checkbox"/> Excavations	<input type="checkbox"/> Skeletal Framing Assembly	<input type="checkbox"/> Ladders
<input type="checkbox"/> Floor Openings	<input type="checkbox"/> Working over water	<input type="checkbox"/> Leading edge with no guard rails
<input type="checkbox"/> Ariel platform	<input type="checkbox"/> Mobile Equipment	<input type="checkbox"/> Electrical equipment
<input type="checkbox"/> Other:		<input type="checkbox"/> Vessel entry
Hazard description including potential fall distance, dimensions, locations, levels etc.		
2. Hazards		
Controls		
<input type="checkbox"/> Overhead obstacles/structures	<input type="checkbox"/> Dust/debris	<input type="checkbox"/> Danger Tape
<input type="checkbox"/> Overhead ice	<input type="checkbox"/> Loose materials, tools	<input type="checkbox"/> Caution Tape
<input type="checkbox"/> Leak/Loss of process material	<input type="checkbox"/> Swingfall	<input type="checkbox"/> Flag Person/monitor
<input type="checkbox"/> Hot piping, process, materials	<input type="checkbox"/> Live electrical contact	<input type="checkbox"/> Netting
<input type="checkbox"/> Sharp edges	<input type="checkbox"/> Other	<input type="checkbox"/> Other
<input type="checkbox"/> Chemical contacts		<input type="checkbox"/> Barricading
		<input type="checkbox"/> Warning Signs
Procedure: _____		
3. Fall Protection System and Components		
System	Components	Connecting Devices
<input type="checkbox"/> Personal fall arrest system	<input type="checkbox"/> Harness type:	<input type="checkbox"/> Snap Hooks
<input type="checkbox"/> Life Safety Rope		<input type="checkbox"/> Carabiner
<input type="checkbox"/> Horizontal Lifeline		<input type="checkbox"/> Rope Grab
<input type="checkbox"/> Safety Net		<input type="checkbox"/> Safety cable/ wire rope sling
<input type="checkbox"/> Control Zone & Safety Monitor	<input type="checkbox"/> Single Lanyard	<input type="checkbox"/> Knots
	<input type="checkbox"/> Double Lanyard	<input type="checkbox"/> Other
<input type="checkbox"/> Self retracting device	<input type="checkbox"/> Shock absorbing device	
type:	<input type="checkbox"/> Type E8 Lanyard	
Procedures i.e. *inspection of equip / equip installation/deployed equip / removal of damaged		
Additional Connecting Devices info (describe): _____		
Anchorage Points (describe and list each one): _____		
Free Fall Distance from Anchor: _____		
Minimum Clearance Requirement from Anchor: _____		
4. Methods used to determine adequacy of Anchor Points and Anchorage		
<input type="checkbox"/> Evaluation by a Professional Engineer	<input type="checkbox"/> Improvised by worker	
<input type="checkbox"/> Existing Engineering Design Documents	<input type="checkbox"/> Permanently marked anchor point (16 KN per worker)	
<input type="checkbox"/> Manufacturers Data	<input type="checkbox"/> Other	
5. Inspection, Assembly, Maintenance and Disassembly of the fall protection system		
Inspection:		Assembly and Maintenance
<input type="checkbox"/> Identification Tags in place for permanent system	<input type="checkbox"/> Horizontal lifeline secured and tight	<input type="checkbox"/> Fall Protection System Inspected
<input type="checkbox"/> Pre-use visual inspection	<input type="checkbox"/> Fall Protection Components Inspected	
Inspected by competent person:		
Name: _____	Inspection date : _____	
Signature: _____		
Assembly Procedure used: _____		
Disassembly Procedure used: _____		

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Figure 2: Page 2 of a Sample Fall Protection Plan

SUNCOR ENERGY

Sample of Blank Fall Protection Plan (pg 2 of 2)

FALL PROTECTION PLAN NAME: _____

Company: _____ Area: _____ Supervisor: _____

Date: _____ Location/Equipment: _____ Number of Workers: _____

Description of Work: _____

6. Emergency Procedures

Is the following readily available in the event of a fall rescue requirement?

<input type="checkbox"/> Ladder capable of reaching fallen workers	<input type="checkbox"/> An aerial work platform	<input type="checkbox"/> Call Operations on Radio Channel:
<input type="checkbox"/> Deployable safety rope	<input type="checkbox"/> Crane and man basket	_____
<input type="checkbox"/> Type 3 retractable life line used	<input type="checkbox"/> Control descent device	<input type="checkbox"/> Call 911 on Plant Phone
<input type="checkbox"/> Suspension release straps used		Call 790-7001 on Cell Phone
<input type="checkbox"/> If the above is not available: consult with Emergency Services Department prior to work commencing.		

Suspension trauma - also known as harness hand syndrome or orthostatic incompetence - is an effect which occurs when the human body is held upright

7. Participants Names (Print and Sign)

8. Company Contact Information

Plan review completed date: _____ time: _____

Supervisor name : _____

Supervisor signature : _____

Telephone contact: _____

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Approved By: Jim Chuey, General Manager, EH&S Upstream



The following individuals have approved and signed this document.

UserName: Jim Chuey (jchuey)

Title: GM EH&S Upstream

Date: Monday, 23 November 2015, 10:55 AM Mountain Time

Meaning: Approver 1 Signed

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