	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 1	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

## Overview

### Purpose


This protocol establishes minimum safe work practices for personnel working at heights.

### Scope

This protocol defines the requirements for analyzing hazards associated with working at heights, along with the selection and use of fall protection equipment to protect workers from fall hazards. The document will apply to all work performed at heights of 4 feet or greater. Contractors will meet or exceed Devon's Fall Protection Protocol when performing work on Devon locations.

### Table of Contents

1.0 RESPONSIBILITIES .....	2
2.0 TERMS AND DEFINITIONS .....	2
2.1 Fall Protection Terms and Definitions .....	2
2.2 General Terms and Definitions.....	3
3.0 PROTOCOL .....	4
3.1 Engineering Controls.....	4
3.2 Pre-Job Safety Review.....	4
3.3 Fall Protection Equipment .....	4
3.4 Fall Protection Systems and Prevention of Falling Objects .....	5
3.5 Anchor Points .....	6
3.6 Scaffolding.....	6
3.7 Fixed Ladders .....	7
3.8 Portable Ladders .....	7
3.9 Inspection and Maintenance Requirements.....	7
4.0 RECORDKEEPING .....	7
5.0 TRAINING REQUIREMENTS .....	8
6.0 REFERENCES .....	9
Appendix A - Controlled Access Zones .....	10
Appendix B - Calculating Fall Clearances .....	12
Appendix C - Anchorage Point Examples .....	13
Appendix D - Fall Protection System Requirements .....	14
Appendix E - Fall Protection Personal Protective Equipment Design Requirements .....	15
Appendix F -OSHA Fixed Ladder Requirements .....	16
Attachment A - Approval, Review, & Modification History .....	17
Attachment B - Fall Protection Inspection Forms .....	18

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 2	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

## 1.0 RESPONSIBILITIES

### Division/Business Unit Leadership

- Reinforce adherence to this protocol and provide resources for application of the protocol.
- Ensure employees responsible for working at elevated heights receive required training.

### Line Supervisor

- Know how this protocol applies to personnel in their area of responsibility.
- Ensure employees have training, skills, knowledge and understanding to comply with this protocol.
- Check periodically to ensure the requirements of this protocol are being met.

### Environmental, Health and Safety

- Provide technical resources and tools for protocol application.
- Monitor compliance through the audit process.

### Devon Employees

- Adhere to the requirements of this protocol.
- Identify and report gaps in this protocol.
- Complete required training.

### Contract Company Representative

- Comply with regulatory requirements and follow the Devon EHS protocols.

## 2.0 TERMS AND DEFINITIONS

### 2.1 Fall Protection Terms and Definitions

**Anchor Point** – a secure point of attachment for lifelines, lanyards or deceleration devices.

**Climb Assist Device** - a device consisting of a length of wire rope reeved over a sheave, with one end attached to a counterweight and the other end attached to a harness.

**Competent Person** - one who is able to identify existing and potential hazards and has authorization to take prompt corrective measures to eliminate them.

**Control Access Zone** - an area used to control access from the leading edge of an elevated position.


**Deceleration Device** – a mechanism which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on a worker during a fall. Examples include rope grab or rip-stitch lanyards, specially woven lanyards, tearing or deforming lanyards, or automatic self-retracting device/lanyards.

**Elevated Position** – a position where a person is exposed to a fall of 4 feet or more to a lower level.

**Fall Arrest System** - full body harness with lanyard that is attached directly to an approved anchor point, that arrests the fall of an individual at a safe rate and prior to landing on a lower level.

**Fall Restraint System** - lanyard and harness system that restricts movement on platforms which prevent a worker from falling.

**Full Body Harness** – an apparatus with straps which may be secured about the worker in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a fall arrest system.

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 3	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

**4-to-1 Rule** – for every 4 feet a ladder extends upward, the ladder should be 1 foot from the base of the structure the ladder is leaned against.

**Guardrail System** – a barrier erected to prevent workers from falling.

**Ladder Safety Device** – a device, other than a cage or well, designed to help prevent accidental falls from ladders, or to limit the length of such falls.

**Lanyard** – a flexible line of rope, wire rope or strap that has a connector at each end for connecting the body harness to a deceleration device, lifeline or anchorage.

**Lifeline** – a line provided for direct or indirect attachment to a worker's body harness, lanyard or deceleration device. Such lifelines may be horizontal or vertical in application.

**Opening, Wall** – a gap or void 30 or more inches high or 18 or more inches wide in a wall or railing, through which workers can fall to a lower level.

**Positioning Device System** – a body harness system rigged to allow a worker to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning backwards.

**Rope Grab** – a device that attaches to a lifeline as an anchoring point that provides a means of arresting a fall.

**Self-Retracting Device** – a deceleration device that can be used for fall arrest protection.

**Snap-Hook** – a self-closing device with a keeper, latch or other similar arrangement that will remain closed until manually opened.

**Three Points of Contact** – a climbing technique used while 2 hands and 1 foot or 2 feet and 1 hand on the ladder or stairwell at all times.

**Toe-board** – a low, protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

**Total Fall Distance** – a maximum vertical distance between the wearer's body harness attachment points before and after the fall is arrested including lanyard extension and/or deceleration distance.

## 2.2 General Terms and Definitions

**Area** - individual operating fields or components that collectively comprise a Region; Areas normally include an area office.

**Area Office** - field office with assigned employees that support an area. (e.g., Beaver Creek, Riverton, etc.).


**Business Unit** - individual components that collectively comprise a Division. Business Units may also be referred to as Basins.

**Contract Company Representative** - a contractor who is assigned responsibilities and oversight for a specific task that requires adherence to Devon EHS protocols.

**Division** - the division operations of Devon are Canada, Strategic-Services, Corporate, Facilities and Pipeline and U.S.

**Division EHS** - titled position that provides EHS guidance and support within a Division. This could be EHS manager, EHS supervisor, EHS advisor, EHS representative, EHS specialist and/or EHS technician.

**Facility** - the collection of tangible structures, piping, valves, vessels, tanks, compression and processing equipment located in close geographic proximity, that are involved directly in the development, production, processing or delivery of oil and gas to market (e.g. a tank battery, drill site, well-site, compressor station, pipeline and gas plant).


	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 4	Revision/Approval Date: R1 - 04/07/2016
---	------------------------	-------------------------------	--------------------------------	--------	---

## Fall Protection Protocol

**Line Supervisor** - titled position that has assigned authority and responsibility for financials, production, maintenance, projects and personnel for a defined area. In Devon, this could be any supervisor, superintendent, foreman or assistant foreman.


**Person-in-Charge (PIC)** - a person that has been authorized by Devon to perform specific tasks to comply with this Devon protocol and/or regulatory requirements related to EHS. The PIC is defined in all protocols in the second column of the protocol section.

<b>3.0</b>	<b>PROTOCOL</b>	
<b>3.1</b>	<b>Engineering Controls</b>	
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>
3.1.1	Construction/Engineering/Design	Where feasible eliminate fall exposures during initial design and construction. <b>Note:</b> Eliminating fall hazards includes, but is not limited to, relocation of the task to a safe location, installing ground level gauges and/or installation of physical barriers such as guardrails, handrails, toe-boards and covers.
<b>3.2</b>	<b>Pre-Task Tailgate</b>	
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>
3.2.1	Employees	Conduct a pre-task tailgate prior to working in an elevated position. Examples include: <ul style="list-style-type: none"> <li>• Fixed/portable ladders</li> <li>• Scaffolding</li> <li>• Platforms</li> <li>• Manlifts</li> </ul> <b>Note:</b> Complete a visual fall protection assessment (including emergency rescue measures, which must be communicated to affected employees if fall hazard cannot be eliminated).
3.2.2	Employee	Only walk on tanks that are designed for this activity and only with proper fall protection.
<b>3.3</b>	<b>Fall Protection Equipment</b>	
Fall Protection Personal Protective Equipment (PPE) will be properly maintained, stored, inspected and ANSI and CSA approved.		
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>
<b>Fall Arrest and Restraint Systems</b>		
3.3.1	Employee	Use fall restraint or fall arrest systems when working at heights 4 feet or greater and fall protection barriers are not reasonable, practical or effective.
3.3.2	Employee	Maintain 100% tie-off when a personal fall-arrest device is required. <b>Note:</b> This can be achieved by using a "Y" lanyard or twin leg retractable lifeline.

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 5	Revision/Approval Date: R1 - 04/07/2016
---	------------------------	-------------------------------	--------------------------------	--------	---


## Fall Protection Protocol

3.3.3	Employee	<p>Inspect fall arrest and fall restraint system components prior to each use for wear, damage and other deterioration.</p> <p><b>Note:</b> In the event defects cannot be immediately resolved, notify your supervisor and remove the equipment from service by placing a tag which states "OUT OF SERVICE" on the equipment or destroying the equipment.</p>
3.3.4	Employee	<p>Only use fall arrest and fall restraint system components that have a documented inspection within the past 12 months (See Appendix B).</p>
3.3.5	Employee	<p>Use appropriate fall protection equipment when working inside the basket of a manlift, crane suspended platform or basket (e.g., bucket truck, extendable boom platform, manlift, articulating boom platform or vertical tower). Never climb on the guardrails (midrail or handrail) of the basket.</p>
3.3.6	Employee	<p>Calculate the maximum fall distance when using a fall arrest system to ensure the proper fall arrest system is used (see Appendix B).</p>
<b>Lanyards</b>		
3.3.7	Employee	<p>Connect fall arrest lanyards to appropriate anchor points directly above the user's head when possible (See Appendix C).</p>
3.3.8	Employee	<p>Do not tie knots in lanyards for any reason and do not tie-off a lanyard to itself unless the lanyard is specifically designed for such use and application.</p> <p><b>Note:</b> Tie-off adapters are manufactured for use on approved anchor points (e.g., beam strap).</p>
3.3.9	Employee	<p>Follow manufacturer's recommendation when connecting the lanyard directly to the D-ring on the full body harness.</p> <p><b>Note:</b> Do not connect more than one lanyard of any type together.</p>
<b>Harnesses</b>		
3.3.10	Employee	<p>Ensure all harness straps are snug to ensure there is no body shifting in case of a fall.</p>
3.3.11	Employee	<p>Never use a body belt in place of a harness.</p>
<b>Components for Harnesses, Lanyards and Lifelines</b>		
3.3.12	Employee	<p>Use only dual action latching snaphooks on fall protection equipment (see Appendix E).</p>
3.3.13	Employee	<p>Use snaphooks that are sized to be compatible with the equipment to which they are connected to prevent unintentional disengagement of the snaphook by depression of the snaphook keeper by the connected member.</p>
3.3.14	Line Supervisor	<p>Ensure fall protection equipment involved in a fall is tagged with a "Do Not Use" tag on the equipment and immediately removed from service or destroyed.</p>
<b>3.4 Fall Protection Systems and Prevention of Falling Objects</b>		
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>
3.4.1	Line Supervisor	<p>Ensure workers engaged in activities on elevated platforms 4 feet or more above lower levels are protected from falling by:</p>

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 6	Revision/Approval Date: R1 - 04/07/2016
---	------------------------	-------------------------------	--------------------------------	--------	---

## Fall Protection Protocol

		<ul style="list-style-type: none"> <li>guardrail/toe-board systems</li> <li>personal fall arrest systems, or</li> <li>a combination of a control line (see Appendix A) and               <ul style="list-style-type: none"> <li>- guardrail/toe-board system</li> <li>- personal fall arrest system, or</li> <li>- safety monitoring system.</li> </ul> </li> </ul>
<b>Guardrail Systems</b>		
3.4.2	Line Supervisor	Ensure guardrails/toe-boards or barricades are erected to protect workers from wall openings on elevated surfaces (see Appendix D).
3.4.3	Line Supervisor	Ensure guardrail systems and toe-boards are installed to prevent falling objects by: <ul style="list-style-type: none"> <li>ensuring openings are small enough to prevent passage of potential fall objects.</li> <li>not storing materials and equipment within 6 feet of an edge unless guardrails and toe boards are erected.</li> <li>ensuring excess materials and debris are removed from the working area at regular intervals.</li> </ul>
<b>Safety Monitoring System (Controlled Access Zones)</b>		
3.4.4	Employee	Controlled access zones may be used without guardrails, toe-boards and personal fall arrest systems under certain situations: <ul style="list-style-type: none"> <li>a safety monitoring system must be established prior to work beginning</li> <li>a control line must be established (e.g., raised warning marker, etc.) and be installed at least 6 feet from the edge (See Appendix A).</li> </ul>
3.5	<b>Anchor Points</b>	
Step	Person In Charge (PIC)	Action
3.5.1	Employee	Select an anchor point that meets the following criteria: <ul style="list-style-type: none"> <li>Capable of suspending 5,000 lbs. per person or certified by a professional engineer to withstand two times the maximum arresting force.</li> <li>Independent of any anchorage used to support or suspend a platform.</li> </ul>
3.5.2	Employee	Tie-off to only manufacturer-approved anchor points.
3.6	<b>Scaffolding</b>	
Step	Person In Charge (PIC)	Action
3.6.1	Line Supervisor	Ensure personnel responsible for the assembly of scaffolding are under the supervision of a competent person.
3.6.2	Line Supervisor	Ensure scaffolds are inspected and tagged by a competent person prior to each work shift they will be used or when modifications to the scaffolding have been made. <b>Note:</b> Scaffolds shall be tagged: <ul style="list-style-type: none"> <li>Green when they are safe to use without restrictions</li> <li>Yellow when they can be used, but with restrictions</li> </ul>

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 7	Revision/Approval Date: R1 - 04/07/2016
---	------------------------	-------------------------------	--------------------------------	--------	---

## Fall Protection Protocol

		<ul style="list-style-type: none"> <li>Red when they are unsafe for use</li> </ul>
<b>3.7</b>	<b>Fixed Ladders</b>	
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>
3.7.1	Line Supervisor	Ensure fixed ladders are maintained in a safe condition. All ladders must be visually inspected prior to use (see Appendix F).
3.7.2	Line Supervisor	Ensure that fixed ladders are constructed with the following: <ul style="list-style-type: none"> <li>Ladders taller than 20 feet will be equipped with a ladder cage or ladder safety device.</li> <li>Ladders taller than 30 feet will be equipped with a ladder safety device or be horizontally offset with landings every 30 feet.</li> </ul>
<b>3.8</b>	<b>Portable Ladders</b>	
	This section specifies straight, extension and "A" frame ladders	
3.8.1	Employee	Ensure portable ladders are: <ul style="list-style-type: none"> <li>Inspected prior to use and free from defects.</li> <li>Positioned so that feet are secure and level.</li> <li>Used only for their intended use.</li> </ul> <b>Note:</b> Damaged ladders will be tagged with "Do Not Use" tag on ladder and immediately removed from service.
3.8.2	Employee	Ensure extension and straight ladders used to access an elevated surface: <ul style="list-style-type: none"> <li>Extend at least 3 feet above the elevated surface.</li> <li>Are positioned so they have the proper slope (See "4-to-1 Rule" in fall protection terms and definitions).</li> </ul>
3.8.3	Employee	Do not use metal ladders around electrical equipment.
3.8.4	Employee	Only one person shall climb or work from a portable ladder at the same time.
3.8.5	Employee	Maintain three points of contact (e.g., two hands and a foot, or two feet and a hand) when climbing/descending a ladder.
3.8.6	Employee	When not in use portable ladders must be properly stored.
<b>3.9</b>	<b>Inspection and Maintenance Requirements</b>	
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>
3.9.1	Line Supervisor	Ensure documented fall protection PPE inspections are conducted annually (see Attachment B).
<b>4.0</b>	<b>RECORDKEEPING</b>	
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>
4.1	Employees	Forward records to Division EHS for filing.
4.2	Division EHS	File the records from Section 4.2 as noted below:

**Fall Protection Protocol**


Record	File Location & Number	Retention Time	Enterprise Classification Structure Code
Harness Inspection Sheet	See Field Office File Directory	Current + 3 Years (CY=Current Year)	EH45
Lanyard Inspection Sheet	See Field Office File Directory	Current + 3 Years (CY=Current Year)	EH45
SRD Inspection Sheet	See Field Office File Directory	Current + 3 Years (CY=Current Year)	EH45

Note: The Records Management Enterprise Classification Structure Code is listed as a reference, which should be utilized when records are sent to stored records.

**5.0 Training Requirements**

Step	Person In Charge (PIC)	Action															
5.1	Line Supervisor	<p>Ensure Devon employees who will perform elevated work have been trained on this protocol before assigning them applicable activities.</p> <table border="1" data-bbox="487 1079 1463 1854"> <thead> <tr> <th data-bbox="487 1079 680 1142">Training Level</th> <th data-bbox="680 1079 1036 1142">Participants</th> <th data-bbox="1036 1079 1463 1142">Content</th> </tr> </thead> <tbody> <tr> <td data-bbox="487 1142 680 1205">General Awareness</td> <td data-bbox="680 1142 1036 1205">All employees around elevated positions</td> <td data-bbox="1036 1142 1463 1205">Hazard identification.</td> </tr> <tr> <td data-bbox="487 1205 680 1331">Authorized</td> <td data-bbox="680 1205 1036 1331">Employees accessing elevated positions</td> <td data-bbox="1036 1205 1463 1331">Hazard identification. Selection of anchorage points. Equipment selection. PPE inspection/storage.</td> </tr> <tr> <td data-bbox="487 1331 680 1640">Competent</td> <td data-bbox="680 1331 1036 1640">Employees who oversee the installation of fall protection systems and approve key fall protection elements</td> <td data-bbox="1036 1331 1463 1640">Installation of fall protection systems (e.g., horizontal lifelines, etc.). Design of controlled access zones. Approving anchorage points. Selection of anchorage points. Hazard identification. Equipment selection. PPE inspection/storage.</td> </tr> <tr> <td data-bbox="487 1640 680 1854">Scaffold Competent Person Training</td> <td data-bbox="680 1640 1036 1854">Employees who will erect, disassemble, move, operate, repair, maintain or inspect scaffolding.</td> <td data-bbox="1036 1640 1463 1854">Hazard identification for specific scaffold type being used. Correct procedures for erecting, disassembling, moving, operating, repairing, inspecting and maintaining the scaffold being used.</td> </tr> </tbody> </table>	Training Level	Participants	Content	General Awareness	All employees around elevated positions	Hazard identification.	Authorized	Employees accessing elevated positions	Hazard identification. Selection of anchorage points. Equipment selection. PPE inspection/storage.	Competent	Employees who oversee the installation of fall protection systems and approve key fall protection elements	Installation of fall protection systems (e.g., horizontal lifelines, etc.). Design of controlled access zones. Approving anchorage points. Selection of anchorage points. Hazard identification. Equipment selection. PPE inspection/storage.	Scaffold Competent Person Training	Employees who will erect, disassemble, move, operate, repair, maintain or inspect scaffolding.	Hazard identification for specific scaffold type being used. Correct procedures for erecting, disassembling, moving, operating, repairing, inspecting and maintaining the scaffold being used.
Training Level	Participants	Content															
General Awareness	All employees around elevated positions	Hazard identification.															
Authorized	Employees accessing elevated positions	Hazard identification. Selection of anchorage points. Equipment selection. PPE inspection/storage.															
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	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 9	Revision/Approval Date: R1 - 04/07/2016
---	------------------------	-------------------------------	--------------------------------	--------	---

**Fall Protection Protocol**

				Design criteria, maximum intended load-carrying capacity and intended use of scaffold being used. Proper equipment selection when the scaffold is being used with restrictions.
		Scaffold User Training	Employees who use scaffolding	Hazard identification for specific scaffold type being used. Proper equipment selection when the scaffold is being used with restrictions. Proper use of scaffold. Proper handling of materials on the scaffold. Maximum intended load. Load-carrying capacities of the scaffold used.

**6.0 REFERENCES**

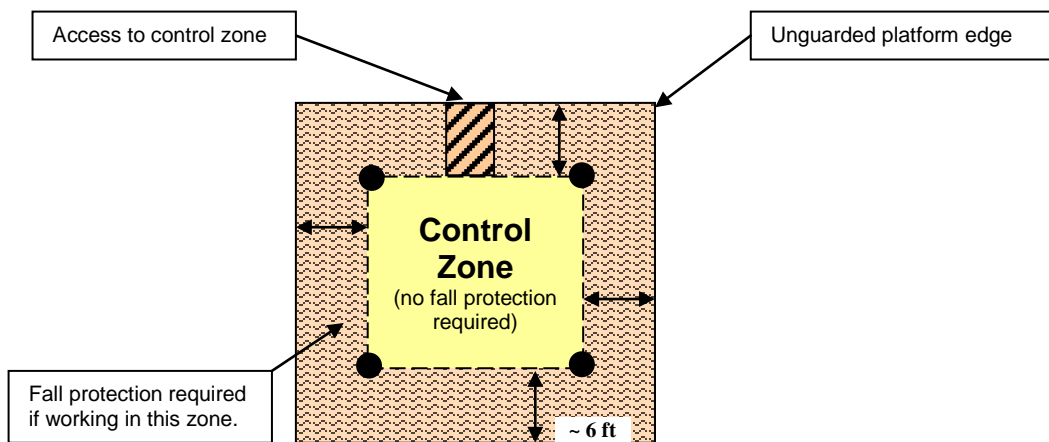
	ANSI Standard A10.8 - 2011 Scaffolding Safety Requirements
	ANSI A10.32 Construction Fall Protection
	ANSI Z359 Fall Protection
	OSHA 29 CFR 1910.23, Walking Working Surfaces
	OSHA 29 CFR 1962.1053 Fixed Ladders
	OSHA 29 CFR 1910.28, Scaffolding
	OSHA 29 CFR 1926.451, Scaffolding
	OSHA 29 CFR 1926.453 Aerial Lifts
	OSHA 29 CFR 1925.454 Scaffolding Training Requirements
	OSHA 29 CFR 1926.501, Construction Fall Protection
	OSHA 29 CFR 1926.502, Construction Fall Protection
	OSHA 29 CFR 1926.1053 Stairways and Ladders
	OSHA 29 1910.27 Fixed Ladders

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 10	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

## Appendix A Controlled Access Zones

**Controlled Access Zones** A controlled access zone is a clearly marked, designated work area where certain types of work may take place without the use of a conventional fall protection system (personal arrest or safety net) to protect the workers working in the zone, and is used to keep out unauthorized workers that do not have physical fall protection from the work area.

Diagram of a Controlled Access Zone



**Note:** In this example, workers in the control zone do not require fall protection, BUT the control zone must be

- at least 6 feet away from an unguarded edge, and
- marked with raised warning markers.


Entry into a control zone does not require fall protection.

### Defining the Controlled Access Zone Area

Controlled access zones must be defined by

- a control line, or
- any other means that restricts access.

Continued on next page

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 11	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

**Control Line Requirements**

Control lines may consist of ropes, wires, tapes or equivalent materials and supporting stanchions.

Each control line must


- extend along the entire length of the unprotected edge approximately parallel to the unprotected edge
- connect on each side to a guardrail system or wall
- be flagged or otherwise clearly marked with high-visibility material at intervals no more than 6 feet
- be rigged and supported in such a way that the lowest point (including sag) is not less than 39 inches from the elevated work surface and the highest point is not more than 45 inches from the elevated work surface,
- be strong enough to sustain stress of 200 lbs. minimum, and
- be erected no less than 6 feet and no more than 25 feet from the unprotected or leading edge.

**Note:** In cases where pre-cast concrete members are being erected, the control lines should be no less than 6 feet and no more than 60 feet, or half the length of the member being erected, whichever is less, from the leading edge.

**Platforms, Floors and Roofs**

Use the table below for guardrail systems on platforms, floors and roofs.

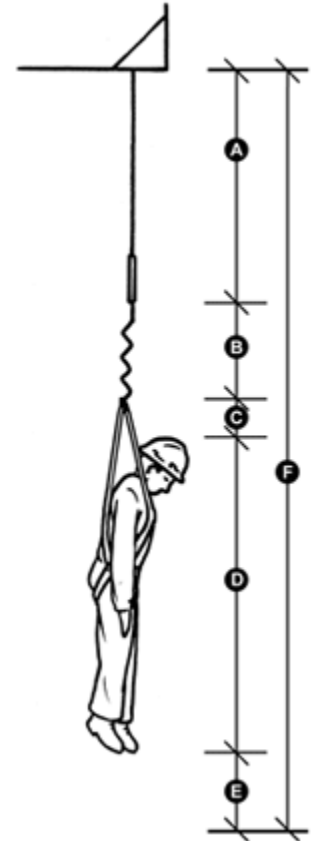
When on platforms, floors and roofs where guardrail systems are ...	Then ...
not in place prior to the beginning of the work activity	enlarge controlled access zones as necessary to enclose all <ul style="list-style-type: none"> <li>• points of access</li> <li>• material handling areas, and</li> <li>• storage areas.</li> </ul>
in place, but need to be removed to allow the work activity to progress or leading edge work to take place	remove only that portion of the guardrail necessary to accomplish that day's work.


	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 12	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

### Appendix B Calculating Fall Distance Clearances

A worker is six (6) feet tall (1.8m) using a (6ft.) (1.8m) long lanyard. The combined weight of the worker, clothing and tool belt is 220lbs. (100 kg).


- A Length of lanyard - 6ft. (1.8m)
- B Shock absorber pulling apart - 3.6ft. (1.1m) ANSI-compliant shock absorber;
- C Harness stretch plus D-ring sliding - 1ft. (0.3m) for normal harness and 2.5 ft. (0.7m) for stretch webbing harness
- D Height of worker - 6ft. (1.8m)
- E Safety factor - clearance below feet of 3ft. (0.9m)
- F A+B+C+D+E Minimum clearance distance varies between 18.5ft. (5.7m) and 22.1ft. (6.8m) depending on the components used in the system



	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 13	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					


**Appendix C**  
**Non-Engineered Anchorage Point Examples**

Acceptable Tie-off Points	Unacceptable Tie-off Points
<ul style="list-style-type: none"> <li>• I-beams</li> <li>• Horizontal support beams (structural supports)</li> <li>• Equipment lifting eyes</li> <li>• Scaffolding under specific situations</li> <li>• Other substantial anchors that are capable of supporting more than 5,000 pounds per individual attached</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical conduit</li> <li>• Fire sprinkler piping</li> <li>• Heating/cooling (HVAC) duct</li> <li>• Handrails/guardrails</li> <li>• Electrical cable trays</li> <li>• Rebar</li> <li>• Light fixtures</li> <li>• Ladder</li> <li>• Lifting eyes on mobile equipment (e.g., back hoe, forklift, etc.)</li> </ul>

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 14	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					


**Appendix D**  
**Fall Protection System Requirements**  
 (OSHA 1926.502)

<b>Guardrails:</b>	
Railings	<p>Guardrail system members, will be:</p> <ul style="list-style-type: none"> <li>• 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.</li> <li>• Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is a wall or platform opening at least 21 inches (53 cm) high.</li> <li>• Guardrail systems will be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge.</li> </ul> <p><b>Note:</b> When employees are using ladders, scaffolds, or other tools or equipment that will raise a person higher than the railings, then the guarding will need to be raised equal to the height of the equipment or fall arrest equipment will be worn.</p>
Toe-boards	<p>Toe-board members will be:</p> <ul style="list-style-type: none"> <li>• erected along the edges of the elevated work surface for a distance sufficient to protect persons working below</li> <li>• capable of withstanding a force of at least 50 lbs. applied in any downward or outward direction at any point along the toe-board</li> <li>• a minimum of 3.5 inches tall from their top edge to the level of the elevated work surface and have no more than 0.25 inches clearance above the elevated work surface and</li> <li>• solid (or have openings no larger than 1 inch in size).</li> </ul>
Hoisting Areas	<p>When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.</p>

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 15	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

**Appendix E**  
**Fall Protection Personal Protective Equipment Design Requirements**  
(ANSI Z 359.1 - 2007)


Snaphooks and Carabineers	Snaphooks and carabineers must meet the following criteria: <ul style="list-style-type: none"> <li>• be self-closing and dual action, self-locking and shall be capable of being opened only by at least two consecutive deliberate actions</li> <li>• withstand 5,000-pounds (22.2kN) tensile load without breaking or distortion sufficient to release the gate</li> <li>• the gate will be capable of withstanding a minimum load of 3,600 pounds (16kN) without the gate separating from the nose of the snaphook or carabineer body by more than 0.125 inches (3.1mm)</li> </ul>
Harness	Full body harnesses will meet the following criteria: <ul style="list-style-type: none"> <li>• load bearing straps shall have a minimum width of 1-5/8 inches (41mm) and strap ends shall be finished so as to prevent fraying</li> <li>• strap material shall develop a breaking strength of not less than 5,000 pounds (22.2kN)</li> <li>• personal fall arrest system in which a full body harness is used shall produce a maximum arrest force (MAF) of not more than 1,800 pounds (8.0kN)</li> <li>• harnesses equipped with a front-mounted attachment element for fall arrest shall be used only as part of a personal fall arrest system that limits the maximum free fall distance to 2 feet (0.6m) and limits the maximum arrest force to 900 pounds (4.0kN)</li> </ul>
Lanyard	Lanyards will meet the following criteria: <ul style="list-style-type: none"> <li>• Ropes and webbing used in the construction of lanyards will have a minimum breaking strength of 8,500 pounds (37.8kN) when tested</li> <li>• Formed eye terminations of wire rope shall have a minimum breaking strength of 80% of the wire rope when tested</li> <li>• Lanyards shall have a minimum breaking strength of 5,000 pounds (22.2kN).</li> <li>• Lanyards with two integrally connected legs shall have a minimum of 5,000 pounds (22.2kN)</li> <li>• Energy absorbers, when subjected to a static force of 450 pounds (2kN) When energy absorbers are dynamically tested</li> <li>• the maximum arrest force shall not exceed 900 pounds (4kN)</li> <li>• Lanyards shall have a minimum breaking strength of 5,000 pounds (22.2kN)</li> </ul>
Self-retracting device (SRD)	Self-retracting device will meet the following criteria: <ul style="list-style-type: none"> <li>• Webbing shall have a minimum breaking strength of 4,500 pounds (20kN).</li> <li>• Maximum arrest force shall not exceed 1,800 pounds (8kN).</li> </ul>

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 16	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

## Appendix F OSHA Fixed Ladder Requirements

Fixed Ladders 1910.27	<ul style="list-style-type: none"> <li>• The step-across distance from the nearest edge of ladder to the nearest edge of equipment or structure shall be not more than 12 inches, or less than 2 1/2 inches.</li> <li>• Cages or wells will be provided on ladders of more than 20 feet to a maximum unbroken length of 30 feet.</li> <li>• Cages shall extend a minimum of 42 inches above the top of landing, unless other acceptable protection is provided.</li> <li>• Cages shall extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder, with bottom flared not less than 4 inches, or portion of cage opposite ladder shall be carried to the base.</li> <li>• Cages shall extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder, with bottom flared not less than 4 inches, or portion of cage opposite ladder shall be carried to the base.</li> <li>• The side rails of through or side-step ladder extensions shall extend 3 1/2 feet above parapets and landings. For through ladder extensions, the rungs shall be omitted from the extension and shall have not less than 18 nor more than 24 inches clearance between rails. For side-step or offset fixed ladder sections, at landings, the side rails and rungs shall be carried to the next regular rung beyond or above the 3 1/2 feet minimum.</li> <li>• Ladder safety devices may be used on tower, water tank and chimney ladders over 20 feet in unbroken length in lieu of cage protection. No landing platform is required in these cases. All ladder safety devices such as those that incorporate lifebelts, friction brakes and sliding attachments shall meet the design requirements of the ladders which they serve.</li> </ul>
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	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 17	Revision/Approval Date: R1 - 04/07/2016
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**Fall Protection Protocol**

**Attachment A - Approval, Review and Modification History**

Revision Number	Approved/Revised/Reviewed By	Approval/Revision/Review Date	Description (Initial Approval, Revision or Review along with further details of revision if needed)
00	Richard Luedecke	6/25/2015	Initial Approval
01	Richard Luedecke	4/7/2016	Revision #1 - Updated section 3.3.5 and 3.5.2 to be more in line with following the manufactures recommendations and training for what type of fall protection to use while inside a manlift, crane suspended platform or basket.

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 18	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

### Attachment B

#### Harness Inspection Sheet

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Auditor: \_\_\_\_\_ Date Manufactured: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Serial No.: \_\_\_\_\_

PASS

FAIL



All fall protection equipment shall be inspected before each use in accordance with the manufacturer's instructions and company policy. Inspections should be documented once a year.

The following is general guidance for the inspection of this equipment.

#### Harness Inspection:

##### Webbing

PASS

FAIL

Inspect the entire surface of webbing for damage. Beginning at one end, bend the webbing in an inverted "U." Holding the body side of the belt toward you, grasp the belt with your hands six to eight inches apart. This surface tension makes the damaged fibers or cuts easier to see. Watch for frayed edges, broken fibers, pulled stitches, cuts, burns and chemical damage.

##### "D" Rings/Back Pads

PASS

FAIL

Check "D" rings for distortion, cracks, breaks and rough or sharp edges. The "D" ring should pivot freely. "D" ring back pads should also be inspected for damage.

##### Attachment of Buckles

PASS

FAIL

Note any unusual wear, frayed or cut fiber, or distortion of the buckles.

##### Tongue/Grommet

PASS

FAIL

The tongue receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted or broken grommets. The webbing should not have any additional punched holes.

##### Tongue Buckle

PASS

FAIL

Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. The roller should turn freely on the frame. Check for distortion or sharp edges.

##### Friction and Mating Buckles


PASS

FAIL

Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment points of the center bar.

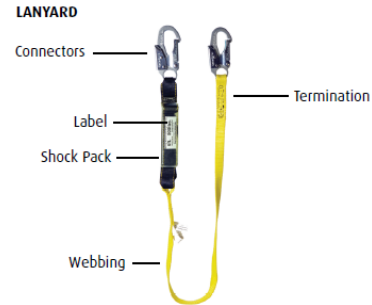
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Signature

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Date

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 19	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

### Lanyard Inspection Sheet

Location: \_\_\_\_\_ Date: \_\_\_\_\_  
 Auditor: \_\_\_\_\_ Date Manufactured: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 PASS  FAIL



All fall protection equipment shall be inspected before each use in accordance with the manufacturer's instructions.

The following is general guidance for the inspection of this equipment. Inspections should be documented once a year.

#### Lanyard Inspection

Shock Pack PASS FAIL

Shock-absorbing lanyards should be examined as a web lanyard. However, also look for signs of deployment. If the lanyard shows signs of having been put under load (e.g., torn out stitching), remove it from service and destroy.

Webbing PASS FAIL

Inspect the entire surface of webbing for damage. Beginning at one end, bend the webbing in an inverted "U." Holding the body side of the belt toward you, grasp the belt with your hands six to eight inches apart. This surface tension makes the damaged fibers or cuts easier to see. Watch for frayed edges, broken fibers, pulled stitches, cuts, burns and chemical damage.

"D" Rings/Back Pads PASS FAIL


Check "D" rings for distortion, cracks, breaks and rough or sharp edges. The "D" ring should pivot freely. "D" ring back pads should also be inspected for damage.

Labels and Markings PASS FAIL

Ensure that the labels are present and legible and have the date of first used.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 20	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

**Self-retracting device (SRD) Inspection Sheet**

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Auditor: \_\_\_\_\_ Date Manufactured: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Serial No.: \_\_\_\_\_

PASS  FAIL

All fall protection equipment shall be inspected before each use in accordance with the manufacturer's instructions and company policy. Inspections should be documented once a year.

The following is general guidance for the inspection of this equipment.

**Retractable Lifeline:**

Webbing PASS FAIL

Inspect the entire surface of webbing for damage. Beginning at one end, bend the webbing in an inverted "U." Holding the body side of the belt toward you, grasp the belt with your hands six to eight inches apart. This surface tension makes the damaged fibers or cuts easier to see. Watch for frayed edges, broken fibers, pulled stitches, cuts, burns and chemical damage.

Lanyard Retraction & Tension Test: PASS FAIL

Do not pull lifeline out of the housing or let it retract while the unit is lying flat. Always inspect and operate the unit in a mounted position. The purpose of the lanyard retraction & tension test is to ensure the lifeline is retracting smoothly into and out of the housing.

**STEPS**


- 1.) Mount retractable on anchorage point
- 2.) Pull out 50% of the lifeline length
- 3.) Maintain a light tension on the lifeline (approx. 1 lb. (0.45kg))
- 4.) Allow lifeline to retract back into housing.
- 5.) Repeat Steps 2 to 4 this time pulling out 100% of lifeline length

**Do Not** allow lifeline to retract into housing uncontrolled - this could result in injury and damage to the unit.

Note: If lifeline does not pull out smoothly or sticks when retracting, pull the entire lifeline out of the housing and allow it to retract slowly under tension. Then repeat the above test.

**Result - The lifeline should pull out freely and retract all the way back into the unit. Remove from service if device does not pass this test.**

(Continued on next page)

	Division: Corporate	Business Unit/Area: N/A	Protocol No.: COR-3EHS12-PR	Page 21	Revision/Approval Date: R1 - 04/07/2016
<b>Fall Protection Protocol</b>					

(Continued from previous page)

**Braking Test**

PASS

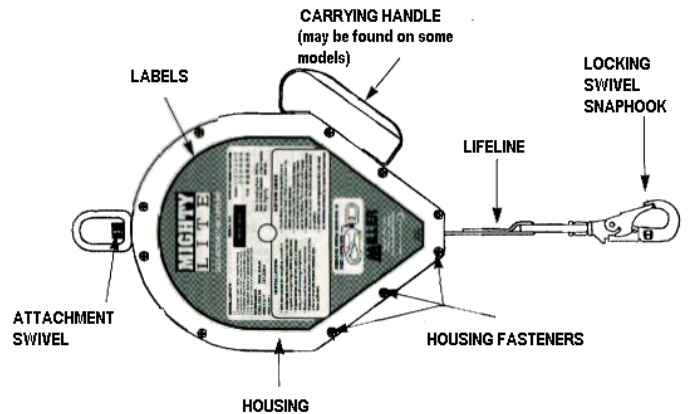
FAIL

The purpose of the braking test is to ensure that the retractable's braking mechanism is working and engaging.

**STEPS**

- 1.) Mount retractable on anchorage point
- 2.) Grasp lifeline and apply a sharp steady pull downward until brakes engage
- 3.) Keep tension on lifeline until brakes are fully engaged
- 4.) Release tension
- 5.) Allow lifeline to retract into housing under light tension

Result - Brakes should engage. There should be no slippage of the lifeline while the brakes are engaged. Once tension is released, the brakes should disengage and the unit should return to retractable mode. Remove from service if device does not pass this test.



Metal Housing

PASS

FAIL

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Signature

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Date