

# Working at Heights

## 1 PURPOSE

Compliance with this procedure is intended to adequately manage the risk associated with fall related injuries by eliminating or reducing fall hazards, preventing persons from getting into fall hazard situations, or ensuring the capability of safely arresting free falls. This Working at Heights (WAH) procedure is in compliance with the Saskatchewan OH&S Act and Regulations and requirements of the organization.

## 2 SCOPE

This document describes the requirements, responsibilities and process for WAH activities.

Specifically, this document:

- Summarizes the steps for equipment selection, inspection, usage, storage and care; and
- Outlines responsibilities and ensures a uniform practice by responsible parties involved in WAH activities.

This procedure applies to all employees and contractors under the direction of the supervisor, performing WAH activities for the company

Appropriate job specific procedures may exist to supplement this procedure. Inquiries concerning the interpretation and requirements of this procedure should be directed to the HSEC Department or supervisor.

## 3 DEFINITIONS

### 3.1 Terms

<b>Anchor Point</b>	A secure connecting point capable of safely withstanding the impact forces applied by a fall protection system
<b>Anchor</b>	A device attached to an anchor point (temporary or permanent).
<b>Body Belt</b>	PFPS safety belt used for fall restraint only
<b>Body wear</b>	Full body harness, full body rescue harness and body belt.
<b>Connecting Devices</b>	A CSA approved locking snap hook or carabineer usually part of a length of web, wire rope or polyester fiber rope (including shock absorber). Also incorporated in Self-Retracting Lanyard devices.
<b>Control Zone</b>	The area within two metres of an unguarded edge of a level, elevated work surface of two metres or more in height
<b>Don</b>	Add or put on.
<b>Energy (Shock) Absorber</b>	Device that dissipates kinetic energy, limits deceleration forces during fall arrest, and does not return kinetic energy to the system or into the human body.

<b>Fall Arrest System</b>	An assembly of components joined together so when connected to an approved anchorage point, it is capable of arresting a worker's accidental fall.
<b>Fall Protection System</b>	Includes fall restriction, fall arrest and/or safety net. A fall protection system may include the use of horizontal or vertical lifelines.
<b>Fall Prevention</b>	Fall prevention is any means used to reasonably prevent employee exposure to a fall hazard, by eliminating work at elevation, using aerial work platforms or scaffolds with guardrails, a travel restraint system or similar protection.
<b>Fall Protection</b>	Fall protection minimizes potential outcome in the event a fall occurs.
<b>Full Body Harness</b>	A body-holding device designed to transfer to a worker's torso and upper legs the forces experienced during and after the arrest of a fall. Depending on classification, a full body harness may also be designed for travel restraint, work positioning, or suspension in addition to those of fall arrest.
<b>Guardrail</b>	One or more horizontal rails secured to uprights and erected along the open sides of scaffolds, floor openings, balconies, runways, etc., to prevent persons or objects from falling over an edge.
<b>Lanyard</b>	A flexible line or strap used to secure a worker or an energy absorber to a lifeline, anchorage, or anchorage connector.
<b>Permanent</b>	Intended and designed to last indefinitely
<b>Qualified Person</b>	Person who, because of knowledge, training and experience, is qualified to perform a specified job safely and properly.
<b>Safety Monitor</b>	A qualified person designated with the sole responsibility of monitoring the work area to ensure workers are not exposed to the fall hazard.
<b>Self-Retracting Device</b>	A device that performs a tethering function while allowing vertical movement (below the device) to the maximum working length of the device, which will arrest a user's fall.
<b>Temporary</b>	Designed to be removed by the last workers using it before commissioning or turnover to the contractor or owner; and intended and designed to last not more than one year
<b>Tether</b>	Strap utilized to secure tools from posing a dropping hazard while performing working at heights activities
<b>Travel Restraint</b>	An assembly of components that, when properly assembled and used together and when connected to a suitable anchorage, prevents a worker from reaching an unprotected edge or opening where a fall could occur.
<b>Warning Lines</b>	Secure, taunt and easily identifiable warning lines installed with the appropriate signage to provide a visual warning of the presence of the fall hazard.

## 3.2 Acronyms

<b>ABC</b>	Anchor – Body wear – Connecting Device
<b>JHA</b>	Job Hazard Analysis
<b>PFAS</b>	Personal Fall Arrest System
<b>PFP</b>	Personal Fall Protection
<b>PFPS</b>	Personal Fall Protection System
<b>SRL</b>	Self-Retracting Lanyard
<b>WAH</b>	Working at Heights

## 4 REQUIREMENTS

### 4.1 General

General requirements for WAH include the following:

1. All work activities being performed at or above a height of 2m require a Working at Heights Permit.
2. Working off ladders at heights greater than 2 meters is considered a working at height activity.
3. A fall protection system is required for all work performed at or above a height of 2m.
4. Tool lanyards are required for working at height activities
5. Hard Hats must be secured when working at heights. (i.e. chin strap, hat liner)
6. Double lanyards are to be utilized at all times to ensure 100% tie-off
7. 100% tie-off must be achieved at all times when using fall arrest systems.
8. The use of Personal Fall Protection Systems (PFPS) shall be considered on all roofs.
9. A pre-use inspection shall be performed prior to use of all Personal Fall Protection (PFP) equipment.
10. Defective PFP equipment shall be removed from service; (i.e. immediately destroyed or tagged out of service and kept in a secure location until repaired).
11. All defective PFP equipment shall be reported to the responsible supervisor.
12. Appropriate PFP equipment shall be selected for all WAH activities.
13. Users of PFP equipment must follow manufactures instructions including harness / lanyard weight ratings.
14. A Personal Fall Arrest System (PFAS) shall include an energy shock absorber.
15. Only clearly identified engineer approved permanent anchor points shall be used with a PFPS.
16. Every piece of PFP equipment shall be inspected as per manufacturer specifications or deemed necessary as per site requirements.
17. Only PFP equipment that meets CSA standards shall be used.
18. The maximum arresting force of a PFAS shall not be greater than 8 kN (1800 lbs) force.
19. The maximum free fall distance of a PFAS shall be kept to less than 1.2 metres (4 ft).
20. Any PFP equipment that has been involved in an arrest shall be taken out of service.

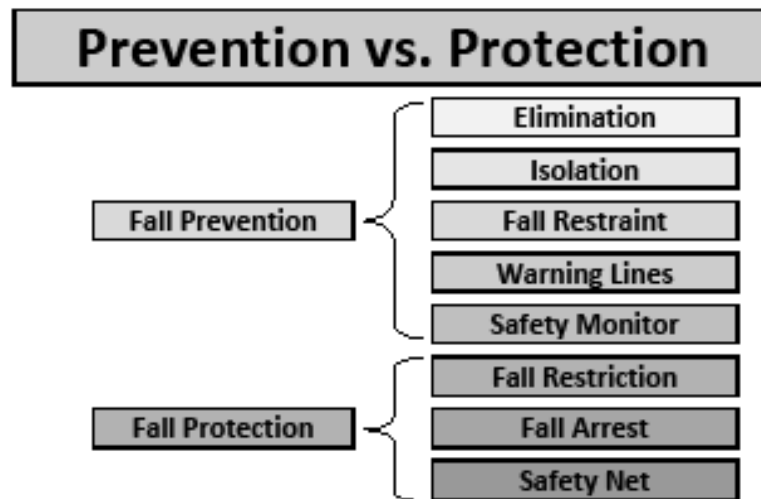
21. Minimizing the load we carry (i.e. heavy equipment increases body weight, consideration must be taken to ensure the rated capacity of a PFPS is not exceeded).
22. Delineating work areas under WAH zones and erecting appropriate signage.
23. Tools being used in working at height activities that could pose a hazard if dropped must be secured (i.e. tethered).

## 4.2 Hierarchy of Control

The hierarchy of control shall be followed systematically and only when one level is not reasonably practicable may the next level be considered. It is not acceptable to select work equipment from lower down the hierarchy (e.g. personal fall arrest, such as harnesses and lanyards) in the first instance. The hierarchy has two basic steps to consider, in order these are:

- Fall prevention strategies to **eliminate** the risk of falling, either through task or job redesign, barriers, administrative controls, etc.
- Fall protection to **minimize** the risk of injury or death in the event a fall does occur. Fall protection strategies allow the worker to fall, trusting a PFPS (i.e., harness and lanyard, safety net) to stop the fall before hitting the ground or the next lower level.

The accepted hierarchy of working at height control is demonstrated below and further detailed in Appendix A:



## 4.3 Personal Fall Protection System

The key word in the PFPS acronym is "SYSTEM". The PFPS is a system of three (3) singular items working together to keep the worker safe.

A PFPS shall consist of A B C:

- **A** Anchor;
- **B** Bodywear; and
- **C** Connecting Devices.

### 4.3.1 Anchor Points

All temporary and permanent anchor points shall be approved prior to use. Effective anchor points rely on effective consideration of:

- Types of anchors;
- Strength (capacity) of anchors;
- Compatibility of connection; and
- Location of the anchor.

#### Types of Anchors

##### **Temporary Anchor**

A temporary anchor shall be installed in locations where a worker would perform work for a short duration that would not benefit from the installation of a permanent anchor (i.e., Beam clamps, beam strap and wire rope).

##### **Permanent Anchor**

Permanent anchors shall be:

- Approved by a professional engineer;
- Clearly identified as permanent anchors; and
- Installed in a location where a worker would regularly perform work (providing the worker could not be protected by other means, including task redesign, guardrails etc.).

Permanent travel restraint systems must be permanently marked as being for travel restraint only.

#### Strength (Capacity) of Anchor Points

Strength requirements for anchor points listed below:

<b>PFPS</b>	<b>Force</b>
Temporary Travel Restraint	800 lbs
Permanent Travel Restraint	2000 lbs
Fall Arrest	5,000 lbs

#### Compatibility of Connection

The size and shape of the anchor must be compatible with the snap hook or carabineer that attaches to it. Always consult the manufacturer's instructions to confirm compatibility.

#### Location of PFAS Anchor

PFAS anchor shall be positioned to:

- Minimize the free fall distance to a maximum of 1.2 meters;
- Minimize the "pendulum" or "swing" fall effect;
- Be easily accessible from a safe location; and
- Facilitate effective rescue.

#### **4.3.2 Bodywear**

Full body harnesses shall meet the applicable CSA Standards.

**Note:** Body belts may be used with a fall restraint system

#### **4.3.3 Connecting Devices**

Connecting devices include but are not limited to lanyards, energy (shock) absorbers, carabineers, self-retracting life lines.

#### **4.4 Control Zone**

A control zone shall only be used where:

- a) a worker can fall from a level surface in a work area; and
- b) Level surfaces are not less than two metres wide when measured from the unguarded edge.

When crossing a control zone, a worker is not required to use a fall protection system, other than the control zone, to enter or leave the work area; and shall follow the most direct route to get to or from the unguarded edge.

A control zone shall be clearly marked with an effective raised warning line or other equally effective method if a worker is working more than two metres from an unguarded edge.

A worker who has to work within a control zone shall use:

- a) a travel restraint system; or
- b) a means that is as equally effective as a travel restraint system as required by this procedure and that prevents the worker from getting to the unguarded edge.

#### **4.5 Working at Heights Permit**

All work activities being performed at or above a height of 2m fall under the Jansen Site Permit to Work System and require a Working at Heights Permit.

These permits are intended to address and control all hazards associated with the work being performed and shall be approved by a DMC Supervisor.

#### **4.6 Storage**

PFP Equipment shall be stored in compliance with the manufacturer's instructions. Examples of proper storage of equipment include:

- Full body harnesses and energy (shock) absorbing lanyards must be stored in a cool, dry clean environment out of direct sunlight and ultraviolet rays; and
- Self-retracting lifelines must be stored in a clean dry location and be fully retracted into the device when not in use.

## **4.7 Inspection**

### **4.7.1 Pre-Use Inspection**

All workers shall inspect their PFP equipment before each use as per manufacturers' recommendations.

### **4.7.2 Scheduled Inspections**

Permanent anchors shall be inspected annually by a professional engineer.

Scheduled inspections of WAH equipment shall be completed as follows:

- SRL's shall be inspected annually by a qualified person or more frequently if so recommended by the manufacturer; and
- Body wear and lanyards shall be inspected by a qualified person at minimum once every 3 months or more frequently if specified in manufactures specifications. All body wear and lanyards must be uniquely tagged and identified with the current inspection period.

## **4.8 Register**

WAH equipment shall be uniquely identified and a register kept to record the following:

- Type of equipment;
- Serial number of equipment;
- Assigned tag number; and
- Date of last inspection.

## **5 RESPONSIBILITIES**

### **5.1 DMC Supervisor**

Supervisors are responsible for items listed in section 5.2 in regards to all workers under the Supervisors authority. In addition the Supervisor is responsible for:

- Reviewing and approving all WAH permits; and
- Forwarding all expired WAH permits on to the HSEC department.

### **5.2 Supervisor**

Supervisors are responsible for ensuring that:

- WAH activities in their facilities or areas under their control conform to this procedure;
- The approved work exposing workers to the risk of a fall has been thoroughly assessed through the development of a JHA;
- A Working at Heights Permit is completed and approved by a Supervisor (see 4.5);
- Job specific WAH recue plans are developed and communicated to workers for each WAH activity;
- All Employees working at height have successfully completed required training;
- A qualified Safety Monitor is available as required;
- Workers are provided with the prescribed PFP equipment and devices;
- Suitable anchor points are identified on the JHA;
- Pre-use inspections of PFP equipment are performed by qualified persons prior to use;

- All WAH operations are planned and supervised by qualified persons to ensure that PFPs are properly selected and rigged;
- Defective PFP equipment is taken out of service (i.e. immediately tagged out of service and kept in a secure location until repaired or destroyed and removed from the WAH Register); and
- Forwarding all expired WAH permits to the Supervisor upon completion of the task or expiry of the permit.

### **5.3 Workers**

Workers who perform work requiring the application of the WAH procedure are responsible for:

- Attending and successfully completing the required PFP training;
- Selection and use PFP equipment as per task-specific hazards identified and the selection requirements outlined in this procedure;
- Ensuring pre-use inspections are completed before use;
- Delineating work areas under WAH zones and erecting appropriate signage;
- Communicating any concerns observed with regard to PFP equipment immediately to their direct supervisor;
- Ensuring a tether is utilized if dropping tools while working at height hazards exist;
- Removing from service and reporting to their supervisor any defective PFP equipment;
- Participating in the development and/or review of the JHAs specific to the task as required; and
- Using all WAH protective equipment and systems as intended by the manufacture.

### **5.4 Safety Monitor**

The safety monitor shall:

- Attend and successfully complete the required WAH training;
- Be qualified in the recognition of fall hazards;
- Be capable of warning workers of fall hazard dangers and in detecting unsafe work practices;
- Maintain visual sighting distance of the employee being monitored;
- Wear a high visibility vest;
- Remain close enough to communicate orally with affected employees; and
- Not have other responsibilities that could take his or her attention from the monitoring function.

### **5.5 HSEC Department**

The HSEC Department is responsible for:

- Developing and maintaining a comprehensive Working at Heights procedure;
- Approving Working at Heights Permits as required; and
- Auditing the effectiveness of the WAH controls utilizing this procedure as the performance standard.

## **6 PROCESS**

### **6.1 Planning Stage**

- Supervisor**
- Recognizes working at height hazards;
  - Assesses hazards through the development of a JHA for the task(s);
  - Ensures effective rescue plan has been developed and communicated to affected workers; and
  - Ensures a WAH permit has been completed.

### **6.2 Working at Heights Activity**

- Supervisor**
- Identifies the appropriate PFPS to use;
  - Identifies suitable anchor point;
  - Ensures pre-job review of JHA and Real-Time JHA with workers has been completed; and
  - Ensures field monitoring of WAH activities takes place.

- Worker**
- Ensures equipment has currently passed a scheduled inspection;
  - Ensures swing fall hazards have been considered;
  - Visually inspects PFP equipment prior to use;
  - Dons / sets-up equipment as per manufacturer's instructions; and
  - Executes task.

### **6.3 Completion of WAH Activity**

- Worker**
- Completes post-use inspection; and
  - Returns and / or stores equipment as per manufacturer's instructions.

## **7 REFERENCES**

- [1] Saskatchewan OH&S Act and Regulations

# Appendix A

## Hierarchy of Control

