VICTORIA UNIVERSITY
HEALTH AND SAFETY PROCEDURE

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WORKING AT HEIGHTS PROCEDURE

PURPOSE

The purpose of this procedure is to ensure that all employees and contractors of Victoria University are aware of the processes, training, and PPE (Personal Protective Equipment) required when working at heights.

SCOPE

This procedure applies to appropriate employees and contractors of Victoria University.

STANDARDS/PROCEDURES

Working at Heights

An employee or contractor shall be adequately protected by a fall protection system that meets the requirements of Ontario Regulation 851 for Industrial Establishments, section 85 and section 86 or Ontario Regulation 213/91 section 26 during Construction Projects where an employee is exposed to any of the following hazards:

- Fall more than 3 metres.
- Falling more than 1.2 metres, if the work area below is used as a path for a material handling equipment or similar equipment.
- Falling into operating machinery
- Falling into water or another liquid
- Falling into or onto a hazardous substance or object
- Falling through an opening in a work surface.

Roles and Responsibilities

<u>Employer Duties</u>

Victoria University must ensure that:

- The fall protection system is adequate for the work being done..
- The fall protection system is being regularly maintained and inspected.

- All workers are trained in the safe use of the fall protection system prior to any work being performed.
- The full-body harness is properly fitted to the worker.
- Every piece of fall protection equipment is inspected and certified at least yearly by a competent person. Inspection documentation will be kept with the Supervisor.

Worker Duties

Only those workers who are trained in the appropriate and safe use of fall protection systems are permitted to work in situations which require their use.

Employees working in situations requiring fall protection systems shall:

- Work in compliance with the appropriate Acts and Regulations governing fall protection.
- Use and wear safety equipment that is sized correctly.
- Use and wear safety equipment that is chosen for the specific task.
- Direct any questions about fall hazards or fall protection to their supervisor.

Pre-Use and Installation

Planning the appropriate fall protection method must be completed before any work has commenced (in areas where there is a risk for falls). This includes:

- A scene survey to identify hazards.
- Determining the type of safety equipment required.
- Ensuring access to help in the event of an emergency.
- Completing an inspection of the tie-off point by a competent person.
- Allowing only 1 worker per tie-off point.
- Using a fall protection system attached to an anchor point when an employee or contractor is working on an elevating work platform (i.e., aerial work platform)
- Following manufacturer instructions to assemble, maintain, inspect, use, and disassemble the fall protection system.

Pre-Use Inspections

- Fall protection systems must be inspected by a competent person.
  - Before every use
  - Annually
- Never use fall protection equipment or a tie-off point presenting a deformation or any damage to the steel.

Lifeline or Lanyard

- Before using a lifeline or lanyard ensure that the lifeline or lanyard is:
  - Is free of imperfections, knots, and splices, other than end terminations.
  - Is protected by padding where the lifeline or lanyard passes over sharp edges.
  - Is protected from heat, flame or abrasive or corrosive materials during use.
- Before using a vertical lifeline ensure that:
  - The lower end extends to the ground or to a safe landing.
  - The lifeline is protected at the lower end to ensure that the line cannot be fouled by any equipment.

Full-Body Harness

- Before using a full-body harness, ensure that the full-body harness:
  - Is properly adjusted to fit the worker securely.
  - Is attached by means of a connecting linkage to a fixed anchor or a lifeline.
  - Connecting linkage is attached to a personal fall arrest system, lifeline, or a fixed anchor.

Ladders/Scaffolds/Aerial Work Platforms

- Trained and authorized operators shall conduct pre-use inspections on all ladders, scaffolds and aerial work platform equipment in addition to their fall protection equipment before each use to ensure that it is in good working order and safe to use.

Any issue found during a pre-use inspection shall be reported immediately to their supervisor who will take appropriate action which can include taking it out of service, calling in service provider to repair equipment, or cutting up and throwing out damaged fall protection equipment (to ensure that it cannot be reused).

Fall Protection Situations

During Ladder Use

Fall protection is required when working from a ladder at a height of more than 3 metres above the nearest permanent safe level.

Regulations permit workers to work from a ladder without fall protection if:

- The work is a light duty task of short duration, such as touch-up painting.
- The worker’s centre of gravity is maintained between the ladder’s side rails.

- The worker can maintain 3-point contact (such as two feet and one hand) with the ladder.

- The ladder is not positioned near an edge or floor opening that would significantly increase the potential fall distance.

During Aerial Work Platform Use

Only trained and authorized operators are permitted to operate aerial work platform equipment. Training shall be specific to the equipment and include both a theoretical and practical session by a third-party training provider, as well as include training on the fall protection equipment.

Ensure all personal protective equipment is worn. The lift guardrails provide fall protection, however in many cases additional fall protection is required. If an employee is working on a temporary platform at a height greater than 3 metres, a fall arresting device must be used and connected to the engineered connection point. All employees must ensure they have the proper harness and equipment and have been trained on correct use.

Using a Travel Restraint System

A travel-restraint system lets a worker travel just far enough to reach the edge but not far enough to fall over. The basic travel-restraint system consists of

- CSA-approved full body harness
- lanyard
- lifeline
- rope grab to attach harness or lanyard to lifeline.
- adequate anchorage (capable of supporting a static load of 2 kilonewtons—450 pounds—with a recommended safety factor of at least 2, that is, 4 kilonewtons or 900 pounds).

Travel-restraint arrangements must be thoroughly planned, with careful consideration given to

- selection of appropriate components
- location of adequate anchor points
- identification of every fall hazard in the proposed work area.

Try to select an anchor point that is as close as possible to being:

- perpendicular to the unprotected edge, and
- at the centre of the work area.

All fall hazards in the work area must be identified. Pay special attention to work areas with irregular shaped perimeters, floor openings, or locations near corners.

A fully extended lifeline and/or lanyard that adequately restrains a worker from a fall hazard in one section of the work area may be too long to provide the same protection in another section.

Two methods of travel restraint are commonly used:

- 1) Connecting an adequately anchored lifeline directly to the D-ring of the worker's full body harness. It is critical that the length of the lifeline, measured from the anchor point, is short enough to restrain the worker from any fall hazard.
- 2) Attaching a lanyard from the D-ring of the worker's full body harness to a rope grab on an adequately anchored lifeline. There must be some means—such as a knot in the lifeline—to prevent the rope grab from sliding along the lifeline to a point where the worker is no longer restrained from falling.

Whether method 1 or 2 is used, the system must be adjusted so that the fully extended lifeline and/or lanyard prevents the worker from reaching any point where the worker may fall. The system must also be securely anchored.

<u>Using a Fall Arrest System</u>

A fall arrest system shall:

Be adequately secured to an anchor point, or a lifeline that is:

- Securely fastened to an anchor point
- Attached to a static line that is securely fastened to an anchor point that is capable of withstanding either the maximum load likely to be imposed on the anchor point or a load of 16 kN (3600lbs), whichever is greater.

Include a lanyard that:

- Is attached to an anchor point or lifeline, where practicable, above the shoulder of the user
- Complies with CSA Standard Z259.1-1995, "Fall Arresting Safety Belts and Lanyards for the Construction and Mining Industries"
- Is as short as work conditions permit.
- Is constructed of
  - Nylon, polyester or polypropylene rope or webbing
  - Wire rope that is equipped with an approved shock absorbing device.
- Is equipped with suitable snap hooks.
- Is approved and maintained.

  Note: it is recommended that shock absorbers be used if the arresting forces of the lanyard alone can cause injury.

Prevent a free fall greater than 1.22 m where:

- The fall arrest system is not equipped with a shock absorption system that complies with CSA Standard Z259.11-M92, "Safety Belts and Lanyards", and that reduces the shock level of any fall to less than 4 kN

- The combined free fall and shock absorbed deceleration distance exceeds the distance between the work area and a safe surface.

Include a full body harness that:

- Is attached to a lanyard.
- Is adjusted to fit the user of the harness.
- Complies with CSA Standard Z259.11-M90, “Full Body Harnesses”

Where a snap hook is used as an integral component of a personal fall arrest system, connecting linkage, full-body harness or lifeline, an employer or contractor shall ensure that the snap hook is self-locking, is approved, and maintained.

Victoria University shall ensure that a lifeline:

- Is available for each employee that may require one.
- Is suitable for the conditions in which the lifeline is to be used, having regard to factors including strength, abrasion resistance, extensibility, and chemical stability.
- Is made of wire rope or synthetic material.
  - Vertical lifelines must have a minimum diameter of:
    - 12 millimetres if the lifeline is made of nylon.
    - 15 millimetres if the lifeline is made of polypropylene.
    - Eight millimetres if the lifeline is made of wire rope.
  - Horizontal lifelines must be designed and certified as safe by a professional engineer; or manufactured to an approved standard; and installed and used in accordance with the manufacturer's recommendations.
- Is free of imperfections, knots, and splices, other than end terminations.
- Is protected by padding where the lifeline passes over sharp edges.
- Is protected from heat, flame or abrasive or corrosive materials during use.
- Is fastened to a secure anchor point that:
  - Has a breaking strength of at least 22.2 kilonewtons.
  - Is not used to suspend any platform or other load.
- Is maintained according to the manufacturer's recommendation.
- Has a lower end extending to the ground or to a safe landing.
- Is protected at the lower end to ensure that the line cannot be fouled by any equipment.

RESCUE PROCEDURE

If an employee falls, and their fall is arrested by fall protection equipment, the following procedure will be used to rescue the worker:

- An elevating work platform will be always kept on site that will be high enough to reach any worker who has fallen.

- Before workers attempt a rescue, they must ensure that they have all the required personal protective equipment for themselves and for the casualty (fall protection equipment for themselves, and at least a new lanyard for the victim).
- Depending on the lifting capabilities of the elevating work platform being used (if it can lift safely two people plus the casualty) two workers will maneuver the elevating work platform beneath the fallen worker.
- The workers will bring the lift up directly underneath the fallen worker until the injured worker touches the floor of the elevating work platform.
- Once the casualty is safely on the floor of the elevating work platform, only then can the rescue workers disconnect his/her fall protection device.
- The rescue workers must then connect the casualty's harness to the elevating work platform for the trip down.
- The elevating work platform must reach high enough for the casualty to touch the floor.
- When the casualty reaches the ground, the first aid responder will attend to them, and the casualty will be taken to the closest medical facility to be attended by a doctor.
- If the casualty is unconscious or there is reason to suspect a back or a neck injury, emergency services must be called before any rescue attempt is made. It is important that you not allow the victim to lie on the ground, as this can cause a heart attack and multiple organ failure when the deoxygenated blood comes flooding back to the heart Keep the person in a kneeling position, then a sitting position for the first 30 minutes after the rescue. Emergency personnel must be informed of how long the employee was suspended in the fall arrest to ensure correct medical attention.
- Prolonged suspension from a fall arrest system can cause orthostatic intolerance, which in turn can result in physical injury, or potentially, death. Research indicates that suspension in a fall arrest device can result in unconsciousness, followed by death, in less than 30 minutes as blood begins to pool in the lower extremities. A person suspended after a fall can feel dizzy in as little as three minutes, experience loss of consciousness in as little as 10 minutes.

COMMUNICATION

This procedure will be communicated to all employees and contractors of Victoria University whose job requires specialized knowledge of these topics.

TRAINING

Workers will receive appropriate working at heights training and applicable elevated work platform training Genie lift, skyjacks, etc.) that meets the requirements of Ontario Regulation 297/13 Occupational Health and Safety Awareness and Training and applicable CSA standards. Working at Heights Training shall be provided by a CPO approved training company.

Records of training for working at heights/fall protection systems and elevated work platforms will be maintained by the Human Resources and Department Manager.

Refresher training shall occur every 3 years.

EVALUATION

This procedure will be reviewed according to the review schedule.

Records of certifications for lifting devices, work platforms and harnesses will be kept by the department manager.

RELATED PROCEDURES

Contractor Program
Personal Protective Equipment
Other Training Requirements

REFERENCE MATERIALS

CSA-Z259.1-05 (R2020) – Body Belts and Saddles for Work Positioning and Travel Restraint
CSA-Z259.2.2-98 (R2009) – Self-Retracting Devices for Personal Fall-Arrest Systems
CSA-Z259.2.3-12 – Descent Devices
CSA-Z259.2.5-12 (R2016) – Fall Arresters and Vertical Lifelines
CSA-Z259.10-12 (R2016) – Full Body Harnesses
CSA-Z259.11-05 (R2010) – Energy Absorbers and Lanyards
CSA-Z259.12-11 (R2016) – Connecting Components for Personal Fall Arrest Systems (PFAS)
Pre-Use Inspection Checklist - Fall Arrest Equipment
Fall Rescue Emergencies
Emergency Rescue Plan

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