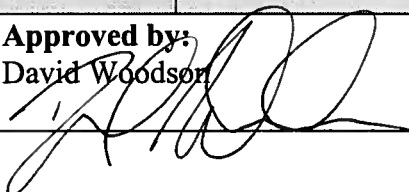


The University of British Columbia Building Operations		FALL PROTECTION	
Policy		I-B-24	
Prepared by: Lori Takenaka	Approved by: David Woodson 	Issue Date: March 2011	
		Replaces: March 19, 1997	

1.0 Purpose:

This procedure is to be used by all Building Operations personnel to ensure that where there is the potential hazard of a fall, the work can be carried out without undue risk to the workers. All workers must be knowledgeable of fall protection requirements and be trained in the selection and use of the appropriate procedures and equipment. Some of the work activities where this procedure applies, but is not limited to, are rooftops, ladders, scaffolds and temporary work platforms.

All employees are expected to work in a safe and professional manner. Failure to abide by this policy and related procedures will result in appropriate corrective actions up to and including discharge.

2.0 References:

- Occupational Health and Safety Regulation and Guideline Part 11 – Fall Protection
- Occupational Health and Safety Regulation and Guideline Part 13 – Ladders, Scaffolds, and Temporary Work Platforms
- UBC Building Operations Policy I-B-25, Control Zones and Safety Monitors
- UBC Building Operations Policy I-B-28, Hazard Identification and Assessment

3.0 Definitions:

Control Zone: means the area between an unguarded edge of a building or structure and a line which is set back a safe distance of at least 2 meters (6.5 feet).

Fall Arrest System: means a system that will stop a worker's fall before the worker hits the surface below.

Fall Restraint System: means a system to prevent a worker from falling from a work position, or from travelling to an unguarded edge from which the worker could fall.

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

4.0 Responsibilities

4.1 Managers / Superintendents / Associate Directors:

- Provide the necessary resources to ensure all requirements of this policy and Occupational Health and Safety Regulations (OHSR) are met.
- Ensure all supervisors have the knowledge, training for fall protection and the tools required to supervise in an effective manner.

4.2 Supervisor:

- Ensure that all workers have the knowledge, training and equipment that meet requirements of this policy and OHSR.
- Ensure a Fall Protection Plan is prepared and followed for each worksite, when required and review the Fall Protection Plan with workers at the pre-job meeting.
- Observe site preparations, workers and work practices and correct when necessary.
- Investigate all worker incidents/accidents and complaints and implement appropriate corrective actions.

4.3 Worker:

- Be knowledgeable in fall protection requirements as stipulated in the training, this policy, and OHSR.
- Be knowledgeable in the use of equipment and use in accordance with manufacturer's specifications and employer's instructions.
- Inspect equipment prior to use and report any damaged equipment to supervisor.
- Wear all necessary personal protective equipment.
- Review the Fall Protection Plan, if applicable, and ensure full understanding of the Fall Protection Plan prior to the start of work.
- Report any unsafe conditions or concerns to supervisor.
- Work in a safe manner.

4.4 Project Coordinators

- When a Fall Protection Plan involves more than one trade, and to which a Project Coordinator has been assigned to the project, the Project Coordinator is the lead and is responsible for completing the Fall Protection Plan, while collaborating with the appropriate trade supervisors.
- When a Fall Protection Plan involves more than one trade, and a Project Coordinator is not assigned to the project, the individual trade supervisors are responsible for completing a Fall Protection Plan, applicable to their work.

4.5 Risk Management Services (HSE):

- Act as a resource for inquiries pertaining to fall protection.
- Assist supervisors in investigating incidents/accidents or complaints.
- Review and update the fall protection program.

5.0 Procedures

5.1 A Fall Protection System must be used when work is being done at a place from which a fall of 3 meters (10 feet) or more may occur, or where a fall from a height of less than 3 meters involves a risk of injury greater than the risk of injury from the impact on a flat surface.

The type of Fall Protection System used must consider a hierarchal approach, with the priority given in the following order:

- 5.1.1 **Guardrails** meeting the requirements of OHSR Part 4 – General Conditions, including temporary guardrails, scaffolding or elevated platforms must be used first. If this is not practicable,
- 5.1.2 **Fall Restraint System** must be used to prevent a worker from falling by limiting the worker's travel distance, with the use of a harness attached to a lifeline connected to a suitable anchor so that the worker can not go over the unguarded edge. If this is not practicable,
- 5.1.3 **Fall Arrest System** must be used that will limit a worker's fall to 1.2 meters (4 feet). If this is not practicable, or will result in greater hazards,
- 5.1.4 **Control Zone** is used when a worker will remain at all times outside of the control zone. It is for level or low-sloped work surfaces and not on work surfaces that have a slope that surpasses 4 vertical and 12 horizontal.

Additional distance must be added to the control zone if:

- The working surface is slippery or sloped.
- The work is carried out at an elevation relative to the unguarded edge.
- The risk is increased by the use of equipment near the control zone.

If a worker will be working within 2 meters (6.5 feet) of the control zone, a raised line that defines the control zone must be set up. The line must be of high-visibility material and be at a height that is between 0.85 meters and 1.15 meters (34 and 45 inches) above the working surface.

5.1.5 **Control Zone with Safety Monitor and Work Procedure** is used when work is done within the control zone.

A safety monitor must be present at all times when a worker is in the control zone and not be engaged in other duties while acting as the safety monitor. A safety monitor must be situated so normal voice communication is attainable with the workers and have a clear view of the work being performed. A safety monitor must not monitor more than 8 workers at a time and is to be easily noticeable from all other workers.

When using control zones and a safety monitor, on narrow roofs less than 12 meters (40 feet) wide, the work may be done without the use of control zone lines by declaring the entire roof surface the control zone and this must be noted on the site specific fall protection plan. The safety monitor is to be

positioned in a safe location and have a clear view of the work being performed.

5.1.6 Work Procedures (other than control zones and safety monitors) may be used if the use of a fall arrest system is not practicable, or will result in a hazard greater than if the system was not used. The work procedures followed to minimize the risk of injury to a worker from a fall must be acceptable to the Board. In these situations, a written Fall Protection Plan (Appendix A) must be completed. Typical situations that may be applicable to Building Operations workers include:

- Installation or removal of fall protection equipment (first person up/last person down rule).
- Light duty work for short duration (working off portable ladder for less than 15 minutes such as inspection and touch-up paint, flat roof inspection with while minimizing exposure to any unguarded edge as much as possible while considering environmental conditions such as wind/ice, and brief transfers between fall protection systems while maintaining a three-point stance). If duration of work is greater than 15 minutes, other forms of access must be used (i.e. scaffolding with proper guardrails).
- Work requiring constant re-positioning (i.e. scaffold erectors).
- Use of normal fall protection methods results in greater hazard, such as cleaning gutters on a very steep roof where there may be a greater hazard from climbing to the top of the roof to install anchors for fall protection equipment, than from working without the equipment.

A Fall Protection System is also not required if work is performed on a flat roof and workers will remain further than 4 meters (13 feet) away from an unguarded edge and no other hazards (i.e. environmental) exist.

5.2 A written Fall Protection Plan (Appendix A) must be established if work is being done at a place where workers are not protected by permanent guardrails, and from which a fall of 7.5 meters (25 feet) or more may occur OR if the use of a fall arrest system is not practicable, or will result in a hazard greater than if the system was not used.

The Fall Protection Plan must be:

- Completed and made available at the workplace prior to work with a risk of falling begins,
- Communicated to the workers at the pre-job meeting, and
- Posted at the worksite, at all access points to the location of work being performed.

6.0 Equipment

Equipment that is used for a fall protection system must consist compatible and suitable components that are able to support the fall restraint or arrest forces while meeting CSA or ANSI equipment standards.

6.1 Harness or Belt

- When using a personal fall protection system for fall arrest, a worker must wear a full body harness.
- When using a personal fall protection system for fall restraint, a worker must wear a safety belt or a full body harness.

6.2 Anchors

- In a temporary fall restraint system, an anchor for a personal fall protection system must be rated to withstand a force of 3.5 kN (800lbs) in any direction.
- Each personal fall protection system connected to an anchor must be secured to an independent point of anchorage.
- In a temporary fall arrest system, an anchor for a personal fall protection system must be rated to withstand a force of 22 kN (5,000lbs) in any direction.
- A permanent anchor for a personal fall protection system must be rated to withstand a force of 22 kN (5,000lbs) in any direction.

6.3 Lanyards

- A shock absorber is to be used with:
 - A lanyard made of wire rope or other inelastic material in a fall arrest system.
 - A wire rope vertical lifeline unless the lifeline is part of a ladder safety device.
- If a shock absorber is used in a fall arrest system, a free fall of up to 2 meters (6.5 feet) is allowed.

6.4 Lifelines

- Lifelines must have a minimum breaking strength of at least 27 kN (6,000lbs) and be free of knots or splices except at its termination. A termination knot or splice must not reduce the lifeline's breaking strength to less than 22 kN (5,000lbs).
- A vertical lifeline for fall arrest must be of a length that limits the fall to 1.2 meters (4 feet) above ground level or other safe lower surface.

6.5 Maintenance and Inspection

- Equipment must be:
 - Inspected by a qualified person before use each work shift.
 - Kept free from substances and conditions that could contribute to its deterioration, and
 - Maintained in good working order.
- After a fall protection system has arrested the fall of a worker, it must be removed from service and not be returned to service until it has been inspected

and recertified as safe for use by the manufacturer or its authorized agent, or by a professional engineer.

- Any equipment that has been identified as being damaged and is not in good work order must be removed from service.

7.0 Training

All workers who will be working in situations where the risk of a fall in excess of 3 meters (10 feet) exists must be trained in fall protection procedures and the selection and use of fall protection equipment.

If a safety monitor system is used, the safety monitor must have additional training.

8.0 Additional Information

8.1 Calculation of Fall Distance when on a Sloped Roof

- In calculating the fall distance, on sloped roofs where the slope exceeds 4 vertical to 12 horizontal, the vertical distance from the worker's position to the unguarded roof edge must be added.
- If the slope exceeds 8 vertical to 12 horizontal, personal fall protection, or safety net must be used, and toe holds must be installed if the roofing material allows them to be installed.

8.2 Ladder Safety

- Inspect each ladder prior to use. Ladders with broken, loose, or missing rungs, bent side rails, or other defects must be identified and removed from service.
- Ladders must be set up with a 4 vertical to 1 horizontal slope, rest against a stable structure, and extend 1 meter (3 feet) above a safe landing.
- For extension ladders, make sure the two sections of the ladder overlap according to the manufacturer's instructions.
- For step ladders, fully open stepladder and lock spreaders in place.
- Ladders must be secured to prevent slipping, including tied or blocked off.
- When climbing up or down, workers are to:
 - Face the ladder while keeping body within the ladder rungs
 - Have a three-point contact at all times.
 - Carry tools in a tool belt or raise and lower them with a hand line.
- Workers must not work from the top two rungs of a ladder.

APPENDIX A

UBC Building Operations Fall Protection Plan

To be completed prior to the start of work by designated Project Coordinator or Supervisor.
Attach roof plan indicating area of work, any anchor points to be used, and control zones.

Project:	Start Date:
Description of work to be done:	
Fume Hoods? <input type="checkbox"/> No <input type="checkbox"/> Yes....If yes, complete below <input type="checkbox"/> Yes <input type="checkbox"/> No Fume hoods shut down and locked out If No, attach work procedures and protection to be used:	Asbestos in roof felts? <input type="checkbox"/> No <input type="checkbox"/> Yes.... If yes, indicate areas on roof plan and include NOPA and work procedures to be followed
Other hazards? If yes, describe	
Site Specific Fall Protection Plan	
Contact Person: Position: Phone #:	Crew/Division Members:
Fall Hazard greater than 3m (10ft)? <input type="checkbox"/> No <input type="checkbox"/> Yes Fall distance? _____ Unusual risks? <input type="checkbox"/> No <input type="checkbox"/> Yes....If yes, please describe:	Are all workers trained on fall protection and sites specific plan? <input type="checkbox"/> Yes <input type="checkbox"/> No Date pre-job held? _____
Fall Protection System(s) to be used: <input type="checkbox"/> Guard rails / parapets. <input type="checkbox"/> Fall Restraint System <input type="checkbox"/> Fall Arrest System <input type="checkbox"/> Control Zone <input type="checkbox"/> Safety Monitor <input type="checkbox"/> Other? _____	Equipment to be used: <input type="checkbox"/> Full Body Harnesses <input type="checkbox"/> Lanyard <input type="checkbox"/> Safety Line and rope grab <input type="checkbox"/> Anchor point Fall restraint 3.5 kN (800 lbs.) (mark on roof plan) <input type="checkbox"/> Anchor point Fall arrest 22 kN (5000 lbs.) (mark on roof plan) <input type="checkbox"/> Horizontal lifeline <input type="checkbox"/> Retractable lifeline or lanyard <input type="checkbox"/> Warning lines for Control Zone <input type="checkbox"/> Safety Monitor <input type="checkbox"/> Slings <input type="checkbox"/> Other? (explain) _____
Work Platforms: <input type="checkbox"/> Step Ladders <input type="checkbox"/> Straight ladders <input type="checkbox"/> Rolling scaffold <input type="checkbox"/> Assembled Scaffold <input type="checkbox"/> Man lift <input type="checkbox"/> Scissors Lift	
Safety Monitor:	Date Trained (must be current within: TBD):
Assembly & Dismantling procedure:	Equipment inspection: (before every workshift) Inspected by: _____ Date: _____ Inspected by: _____ Date: _____ Inspected by: _____ Date: _____
Rescue Procedures:	
Designated Project Coordinator or Supervisor:	
Approved: _____ Manager	Date: _____