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1. Introduction

The Standard Operating Procedure (SOP) for Roof Access was developed by the Department of Environmental Health & Safety in accordance with the University’s Policy Statement on Health and Safety and to ensure compliance with the Ontario Occupational Health and Safety Act and regulations, along with applicable health and safety standards.

2. Scope

This SOP applies all university owned or leased buildings that university employees and/or students may be required to access.

3. Applicable Legislation

Ontario Occupational Health and Safety Act
CSA Standards – Z259 Series

4. Responsibilities

4.1 Responsibilities of Associate Vice-Principal (Facilities) and Physical Plant Directors

Ensure that pertinent construction project managers, supervisors and employees are notified of their responsibilities concerning roof access and working on roof tops.

Ensure that all employees are given adequate supervision and instruction on the hazards of working on rooftops and have been instructed on the proper care and use of any fall protection equipment.

Work with the Department of Environmental Health & Safety to assess requests for roof access.

4.2 Responsibilities of the Director of Environmental Health & Safety

Ensure that departments are aware of their responsibilities under this SOP.

Review this SOP periodically and amend, as necessary.

Prior to giving permission to staff from other departments for rooftop access, ensure that assessments have been completed, rooftop access is essential, staff are aware of this SOP and are trained to the working at heights standard if required.



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4.3 Responsibilities of Director of Campus Security and Emergency Services (CSES)

Ensure that all CSES employees, and external emergency service groups (Kingston Police, OPP, RCMP) are aware of this procedure and that CSES employees are provided with adequate supervision and instruction on the hazards of working on rooftops and reinforce they do not enter the control zone unless they have the appropriate training, have a signed roof access permit, and the approved fall protection equipment.

4.4 Responsibilities of Physical Plant Construction Project Managers

Prior to any construction-related activity, or repair work on equipment or machinery, on roofs where there is fume hood discharge, ensure an appropriate work procedure, or fume hood shut down has been discussed with the contractor.

Ensure the contractor has a working at heights program that meets or exceeds this SOP.

4.5 Responsibilities of Physical Plant Managers and Supervisors

Ensure that all workers are aware of this policy.

Ensure that all workers accessing roofs have completed working at heights training.

Ensure that all workers working in or passing through the control zone are protected from fall hazards by either guard rails, or that they have been trained and are using required fall protection equipment.

Ensure that workers who use ladders to access rooftops have received Queen’s University Ladder Safety Training.

5. Definitions

Buffer zone - The area immediately outside the inner edge of the control zone and extending a further two meters in from that edge.

Control Zone – The two (2) meter border around the edge of a flat roof or platform. The use of a control zone is not permitted as a fall protection system on any sloped roof.



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Flat Roof – Roof system with a slope less than or equal to 4% (1/2-inch change in vertical elevation versus 12 inches of horizontal run).

Safe Zone – An area inside the control zone where it is safe to work without using fall protection equipment.

Sloped Roof - Roof system with a slope greater than 4% (1/2-inch change in vertical elevation versus 12 inches of horizontal run).

6. Access Control

All access points to rooftops must be locked unless there are workers on the roof.

Access points to rooftops must have danger warning signs. Rooftops with fume hood exhausts must also be signed with additional warnings indicating the presence of fume hood discharge and the need to assess the work location in accordance with the following section (Roof Access for Buildings with a Fume Hood System).

If work must take place in the buffer or control zone, then a roof work permit (Appendix A) must be completed by the Physical Plant manager/supervisor prior to the work beginning.

Contractors requiring rooftop access must have a roof work permit (Appendix A) completed by a Physical Plant Manager/supervisor. The roof work permit must be completed prior to signing out keys from Physical Plant Services.

Any other person (Faculty, staff, students etc.) requiring rooftop access must get permission from both the Department of Environmental Health & Safety and Physical Plant Services. Physical Plant Services and the Department of Environmental Health and Safety will assess the need for roof top access and will assess the associated risk.

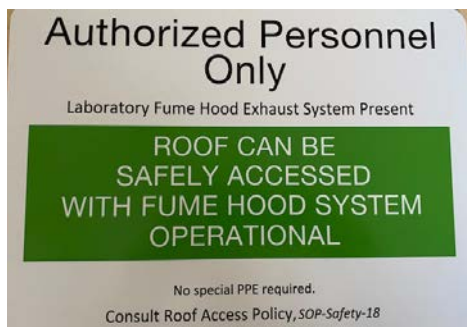
Roof Access for Buildings with a Fume Hood System

Several University buildings have a fume hood system with exhaust fans and stacks on the roof.

For Roofs that have the following sign posted at the roof access point, the roof can be accessed with no special requirements, beyond the fall protection requirements outlined in this SOP, while the fume hood system in the building is operational.



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For roofs where the following sign is posted at the roof access point, consultation with the roof modelling drawing is required to determine whether the work to be completed needs to occur in a restricted area.



If the work is not in a restricted area, roof access can proceed, subject to the fall protection requirements outlined in this SOP.

In instances where the work is occurring in a restricted area, a fume hood system shutdown or the use of personal protective equipment is required. PPS employees must contact their supervisor to initiate the shutdown or determine the necessary personal protective equipment.

Emergency Access

In the case of afterhours emergencies, the call-in person will sign out keys from Campus Security and Emergency Services. All work must comply with section 9 of this SOP.



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If access to roof is required due to a fume hood system, or partial system, failure, PPS employees must contact their supervisor to assess the need for a full system shutdown and inspection.

7. Emergency Notification System

Emergency Notification System sirens are currently installed on the roof tops of Stauffer Library, Humphrey Hall and Chernoff Hall. Before accessing these areas, the Campus Security and Emergency Services, Emergency Report Centre (ERC ext. 36080) must be notified. Upon leaving these areas, the ERC operator must be notified.

The access points to these roof tops are equipped with contact switches which will notify the ERC operator that the door has been opened. If the ERC operator is unable to ascertain who is working or who accessed the roof, the ERC will dispatch Campus Security and Emergency Services staff to that location.

8. Access to Roof with Ladders

If a fixed ladder is greater than twenty feet in length, it must be equipped with a cage. The cage must start at a point eight feet from the bottom of the ladder.

Extension ladders must extend three feet above roof. Individuals must have taken Queen's University Ladder Safety Training.

Tools/equipment should not be carried by a worker as they ascend or descend a ladder. Tools should be placed in a bucket and raised or lowered with a rope.

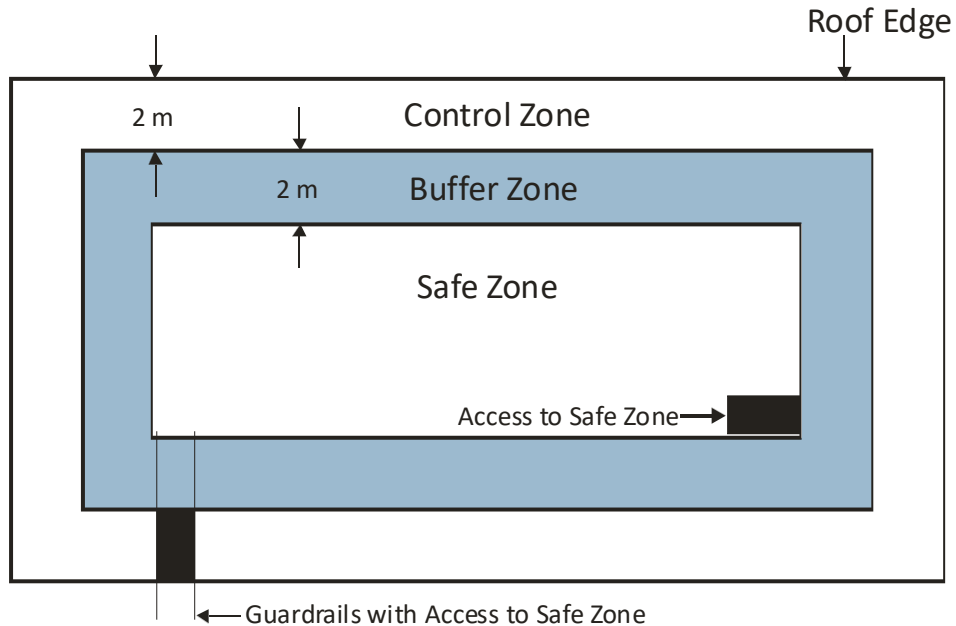
9. Working on Flat Roofs

If there are no guard-rails around perimeter of the roof, a control/buffer/safe zone must be utilized.

If there is a parapet wall of at least 42 inches in height a control/buffer/safe zone is not required.



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If roof top access opens into the control zone, guard rails must be installed to protect the worker until they have entered the safe zone.

When working in the control zone, fall protection equipment must be used. Fall Protection must meet CSA Z259 series of standards (See Fall Protection SOP-Safety-20).

The width of the control zone must be expanded if:

- The working slope is slippery.
- If there are windy conditions or anticipated windy conditions
- The work is carried out at an elevation relative to the unguarded edge.
- The risk is increased using equipment near the control zone.

If workers are to work within the buffer zone, either fall protection or a raised warning barrier/bump line must be used and must be put in place prior to work starting in the buffer zone.

Warning barriers/bump lines must:

- Be set up around work area at least 2 meters from unprotected edges.
- Be 1.07 m (42 inches) high.
- Be supported with weighted posts or supports adequately anchored in place.
- Be made of fiber rope with flags or signs along their entire length.



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For work of short duration, where workers may have to enter the buffer zone a safety monitoring system may be used. A Physical Plant manager/supervisor must appoint a competent person to act as a safety monitor. The safety monitor's sole duty is to monitor the safety of workers and must not have any other duties that may distract from the monitoring.

The safety monitor will:

- Warn employees when it appears that they are unaware of a fall hazard or are acting in an unsafe manner.
- Warn employees if they are approaching the control zone.
- Be located on the same walking/working surface as the employees.
- Be located close enough to other workers to communicate with them orally.

If workers will be further than the boundary of the buffer zone (in safe zone) at all times, a raised warning barrier/bump line or fall protection is not required.

When working on rooftops workers should **not**

- Work with their back to the roof edge while in or near the control zone
- Walk backwards.

10. Skylights

Skylights are made of various products and transparent materials, including polycarbonates, glass, plastics, or some other combination of transparent materials.

Skylights are normally designed to withstand forces such as the weight of snow; however, they can fail under the weight of a worker. This can result in a worker falling through the skylight to a surface below.

A plastic skylight's composition and strength may deteriorate over time because of sunlight and atmospheric contaminants. Unless a skylight's ability to support all loads to which it may be subjected (including the impact of a falling worker) can be determined, it must be treated as a fall hazard.

Specific controls for skylights:

Every skylight must be considered a fall hazard when workers are on a roof. The only exception is to obtain an opinion from an Ontario-licensed Professional Engineer that the



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skylight can withstand any load to which it may be subjected and is not likely to endanger a worker.

A Fall Protection Program must be established and implemented to protect workers who work near a skylight and may include the following fall protection measures:

- temporary guardrails or barriers around a skylight to prevent a worker from falling through or stepping/walking on a skylight.
- a temporary skylight screen, grate or cover of material capable of handling any load imposed by a worker.
- travel restraint systems to prevent a worker from stepping on or falling onto the skylight.
- a fall restricting system designed to limit a worker's free fall.

11. Emergency Notification While Working on Roofs

In the event the work on the roof requires a prolonged access (more than 1-2 hours), roof access will require a method for notifying/alerting individuals on the roof of a fire alarm in the building. Once notified, individuals must leave the roof until provided an all clear by Campus Security and Emergency Service.

12. Contractors

Contractors who take control of a site must have their own policy/rules which must meet the requirements of this policy. The contractor's policy must be approved by Physical Plant Services before control of the site is given to the contractor.

Revision History

- 1.0: Initial Release
- 2.0: Addition of roof access signs and information for building with fume hood systems.

ROOF ACCESS PERMIT

Date: _____

Building: _____

Describe work to be done: _____

Workers requiring access:

Safety Monitor (if used): _____

Potential Hazardous Work	Y/N	Special Safety Precautions
Work on or near fume stacks/vents		
Work on or near high voltage equipment or overhead power lines		
Work on or near an unprotected roof edge (i.e. within 2 meters from edge)		
Work in buffer zone (area that starts 2 meters from edge and 2 meters wide)		
Work where it is possible that objects or materials may fall from the roof		
Other hazards:		

I verify that all workers are aware of and understand policy 'SOP-Safety-18 Roof Access' and have been made aware of all potential hazards and all safety precautions.

 PPS Manager/Supervisor.