



BUILDING BULLETIN

Building Services

Subject: Ventilation Requirements for Roof Spaces
Building Bulletin No: BD.BB.21.21
Date Issued: August 6, 2021
Date Revised:
Reference: 9.19.1.1. & 9.32.1.3, *Ontario Building Code*

Purpose

The purpose of this Building Bulletin is to clarify and summarize the Ontario Building Code requirements related to the inspection of unvented roof areas otherwise known as a “hot roof”.

Background and Definitions

A determining factor of when a roof space is to be insulated to an attic space R-value or a roof space without attic space R-value is noted below.

Definition:

Attic or roof space means the space between the roof and the ceiling of the top storey or between a dwarf wall and a sloping roof.

MMAH Branch Opinion May 1997

RE: Ventilation requirements for roof spaces Ontario Building Code, (OBC) Subsection 9.19.

According to Subsection 9.19. of the OBC, ventilation must be provided to all roof or attic spaces.

This requirement is intended to provide adequate air circulation in order to avoid air being trapped and condensed.

*However, it is the opinion of the Housing Development & Buildings Branch that, where a roof assembly is **filled with rigid insulation (no gaps or empty space in between)**, Subsection 9.19. of the OBC need*

not apply and may be considered to be acceptable under sufficiency of compliance in Section 2.7 of the OBC.

This opinion is based on the fact that, if a roof assembly does not contain any air space or air pockets in between, air will not turn into vapour and condense within such an assembly even under extreme weather condition.

As per the requirements of the code noted above and the MMAH opinion designs must detail how the assembly will be sealed to restrict airflow and designs must be provided as per the below requirements.

Ontario Building Code and Related Standards

Section 9.19. Roof Spaces

9.19.1. Venting

9.19.1.1. Required Venting

- (1) Except where it can be shown to be unnecessary (Please see background section), where insulation is installed between a ceiling and the underside of the roof sheathing, a space shall be provided between the insulation and the sheathing, and vents shall be installed to permit the movement of air from the space to the exterior.

Section 9.32. Ventilation

9.32.1. General

9.32.1.3. Ventilation of Rooms and Spaces

- (1) Except as permitted in Sentence (2), rooms or spaces in a residential occupancy shall be ventilated by natural means in accordance with Subsection 9.32.2.
- (2) The natural ventilation of rooms or spaces required in Sentence (1) may be provided by mechanical means.
- (3) Where a room or space is not provided with natural ventilation as described in Sentence (1), mechanical ventilation shall be provided to exhaust inside air from or to introduce outside air to that room or space at the rate of one-half air change per hour if the room or space is mechanically cooled in summer, and one air change per hour if it is not.

General Interpretation and Design Requirements

1. Attic or roof space means when access IS required (R60 or R50 insulation please refer to the SB-12 package) as per 9.19.2.
2. The roof area is not less than 10 m² in area, 1 000 mm in length or width, and 600 mm in height over at least the area noted 10 m² in area or the attic space contains a fuel-fired appliance.
3. Attic or roof space means when access IS NOT required (R60, R50 or 31 insulation please refer to the SB-12 package) as per 9.19.2.
4. The roof area is less than 10 m² in area, less than 1000 mm in length or width, and less than 600 mm in height over that area and does not contain a fuel-fired appliance.

Reference Information

- *Ontario Building Code*
- *Institute for Catastrophic Loss Reduction*

Attached

Design Requirements Summary

Review Cycle

This building bulletin will be reviewed annually by the Chief Building Official.

Greg Miller, BSS, CBCO, C.E.T.,
Chief Building Official

Building Services Division
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Design Requirements: Roof Space with No Access

Design requirements for a roof space with no access such as vaulted ceilings or other low slope roof systems:

1. The design of an unvented insulated roof space “Hot Roof “ for a **vaulted ceiling or other low slope roof systems (see illustration below)** must be completed by a qualified BCIN person or a person with specialized knowledge of insulation systems such as building science etc.
2. Non-qualified designs will not be accepted and could result in delays in construction.
3. Minimum R31 insulation required - refer to the applicable SB-12 package.

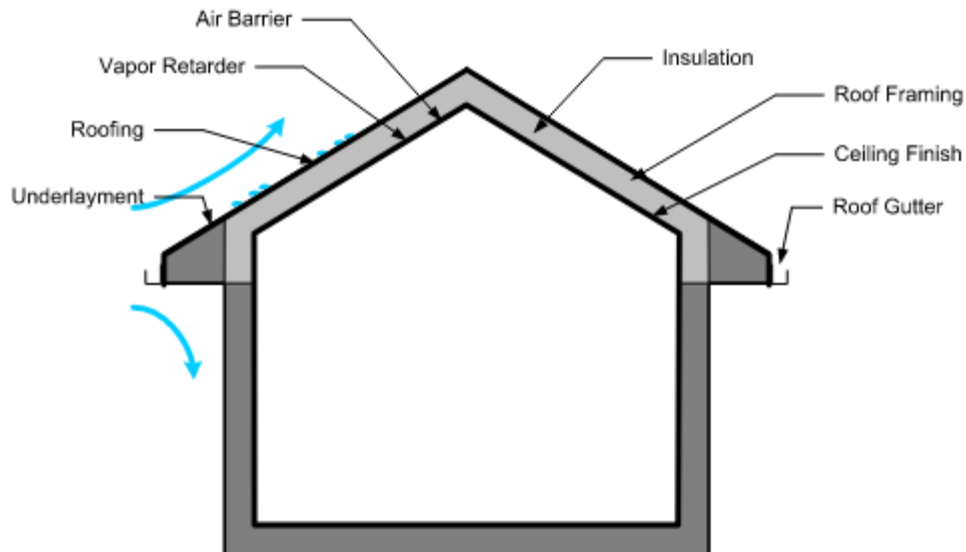


Illustration credit C.J. Schumacher's 2008 "Hygrothermal Performance of Insulated, Sloped, Wood-framed Roof Assemblies,"

Design Requirements: Roof Space with Access

Design requirements for a roof space with access such as an “attic space:

1. The design of an unvented insulated roof space “Hot Roof “ for a **vaulted ceiling or other low slope roof systems (see illustration below)** must be completed by a qualified BCIN person or a person with specialized knowledge of insulation systems such as building science etc.
2. Non-qualified designs will not be accepted and could result in delays in construction.
3. Minimum R60 or R50 insulation required - refer to the applicable SB-12 package.

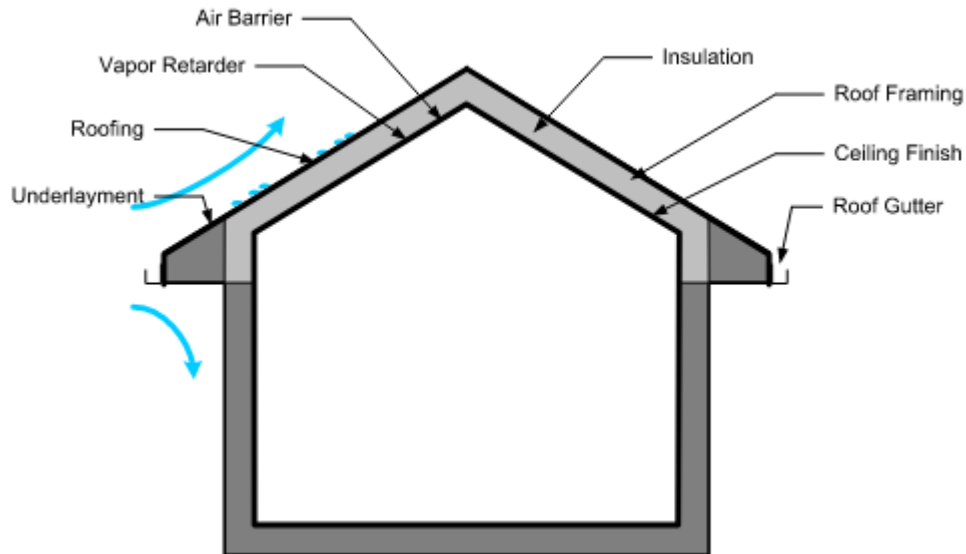


Illustration credit C.J. Schumacher's 2008 "Hygrothermal Performance of Insulated, Sloped, Wood-framed Roof Assemblies,"

Design Requirements: Hot Roof

Design requirements for an attic space with access insulated, otherwise known as a “hot roof”:

1. The design of an **“attic space” insulated as a “Hot Roof” (see illustration below)** and as defined above but insulated to the underside of the roof deck would require the design from a professional engineer who specializes in building science or other related area or a qualified building science design professional along with an engineer who specializes in HVAC design to ventilate the space. Non-qualified designs will not be accepted and could result in delays in construction.
2. The design of an unvented insulated roof space “Hot Roof “ for a **vaulted ceiling or other low slope roof systems (see illustration below)** must be completed by a qualified BCIN person or a person with specialized knowledge of insulation systems such as building science etc.
3. Non-qualified designs will not be accepted and could result in delays in construction.
4. Minimum R60 or R50 insulation required - refer to the applicable SB-12 package.

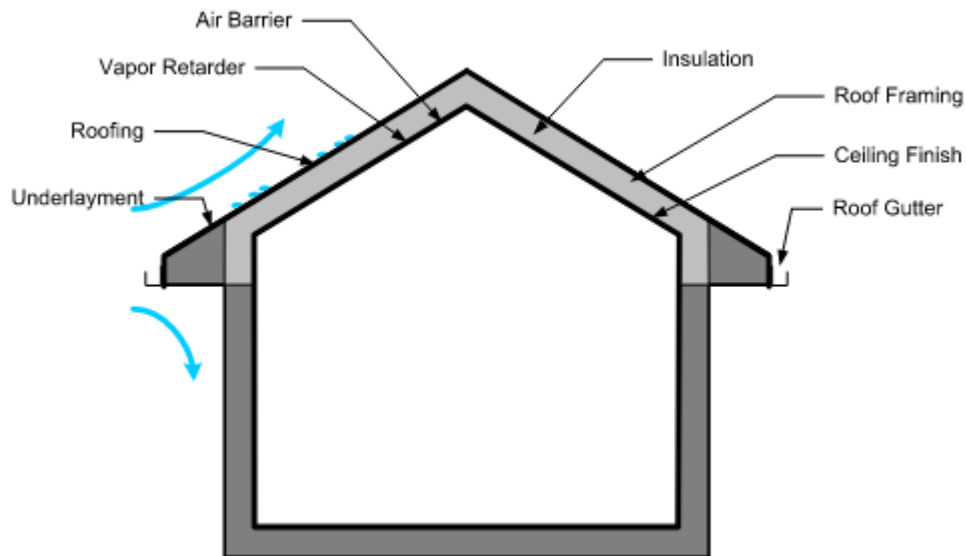


Illustration credit C.J. Schumacher's 2008 "Hygrothermal Performance of Insulated, Sloped, Wood-framed Roof Assemblies,"

Please note:

- Insulation installers shall not install insulation unless it conforms to the reviewed plans.
- Any changes to designs shall be reviewed by the Building Services Division prior to the material being installed to ensure that the designs comply with the Ontario Building Code.



- Check warranty of roofing material manufacturer prior to installing a hot roof
- High-efficiency and ultra-efficient attic insulation systems include:
 - vented attics that are insulated over the ceiling deck with increased amounts of blown fiberglass or blown cellulose;
 - unvented attics that are insulated on the underside of the roof deck with blown spray foam; and
 - vented or unvented attics that are insulated above the roof deck with rigid foam.
- High-efficiency attic insulation helps provide added thermal protection, lessens wasted energy, and increases enhanced comfort and quiet.