Township of SEVERN

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Radon Control Information Guide

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Background

Radon is a radioactive gas that occurs naturally when the uranium in soil and rock breaks down. It is invisible, odourless, and tasteless. When radon is released from the ground into the outdoor air, it is diluted and is not a concern. However, in enclosed spaces like homes, it can accumulate to high levels. High radon levels can be a risk to your health and that of your family. Radon exposure is the number one cause of lung cancer in non-smokers. Exposure to high levels of radon in indoor air results in an increased risk of developing lung cancer. The risk of cancer depends on the level of radon and how long a person is exposed to those levels.[1]

Radon requirements for new buildings and additions

As of April 1, 2025, the 2024 Ontario Building Code (OBC) mandates that every new house, including additions to existing houses, must include a rough-in for radon control. This OBC requirement allows for the future connection of a complete radon mitigation system, should it be required.

It is important to note that radon may not be present in every home and that it is the responsibility of the homeowner to perform testing to determine the presence of radon.

When and where must rough-ins be installed?

All wall, roof, and floor assemblies in contact with the ground must be constructed to prevent radon gas from entering the building.

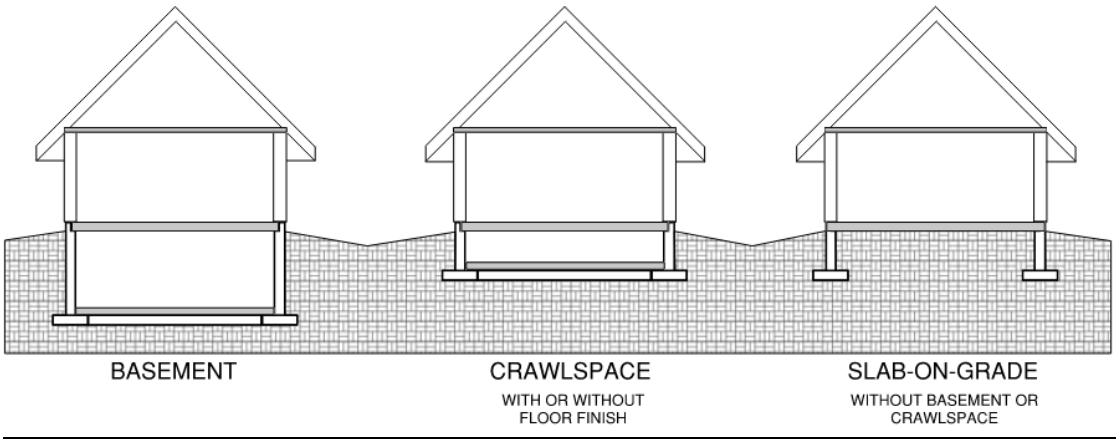
[1] Government of Canada, 2026. Accessed from: https://www.canada.ca/en/health-canada/services/health-risks-safety/radiation/radon.html.

A radon control rough-in is required in the following construction scenarios:

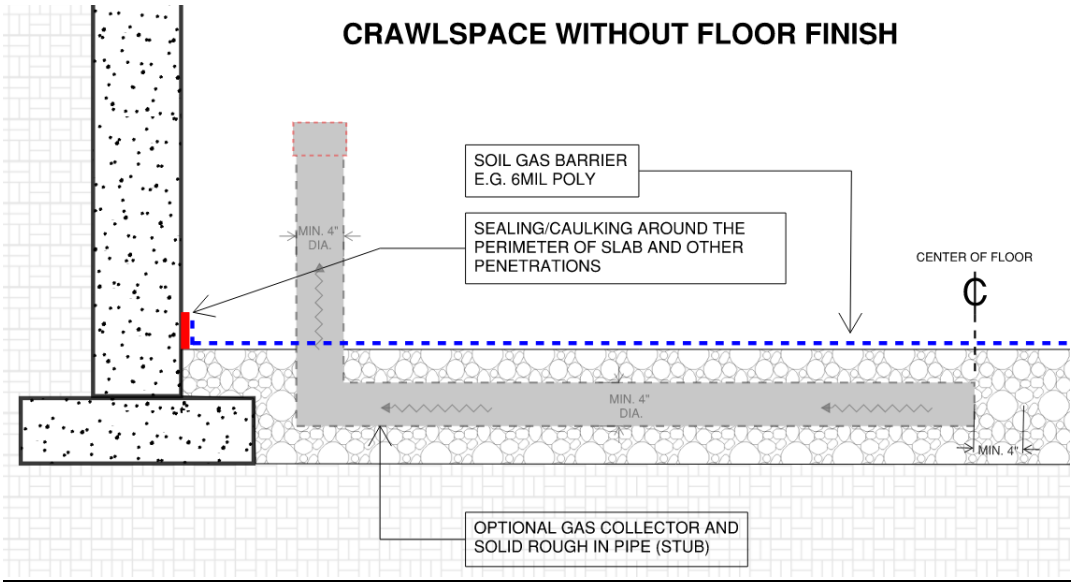
- **all new houses** or other buildings within the scope of Part 9 of the OBC
- **additions to existing houses** or other buildings within the scope of Part 9 of the OBC

Typical installation locations for rough-ins include (see Figure 1):

- below a concrete floor slab in a basement or crawlspace
- below a concrete floor slab in 'slab-on-grade' construction
- in a crawlspace with an unfinished floor (see Figure 2):
    - in this scenario, the rough-in (stub) and collector pipes may not be required, provided there is future access for the installation of the stub
        - the installation of the gas permeable layer and soil gas barrier remain mandatory



1. Image of drawings of typical installation locations for rough-ins.



2. Image of a drawing for radon control rough-in with a crawlspace without floor finish design.

Radon control system components

Gas-permeable layer

- minimum 4 inch (in or “) thick layer and typically includes a clean granular material (e.g., ½” - ¾” clear stone)
- located between the soil gas barrier and the ground to allow for the depressurization of that space

Soil gas barrier

- typically a sheet-type material (e.g., Poly 6 mil polyethylene film)
- located between the gas permeable layer and the floor-on-ground (e.g., concrete floor slab)
- purpose is to reduce leakage of radon from the ground into the building

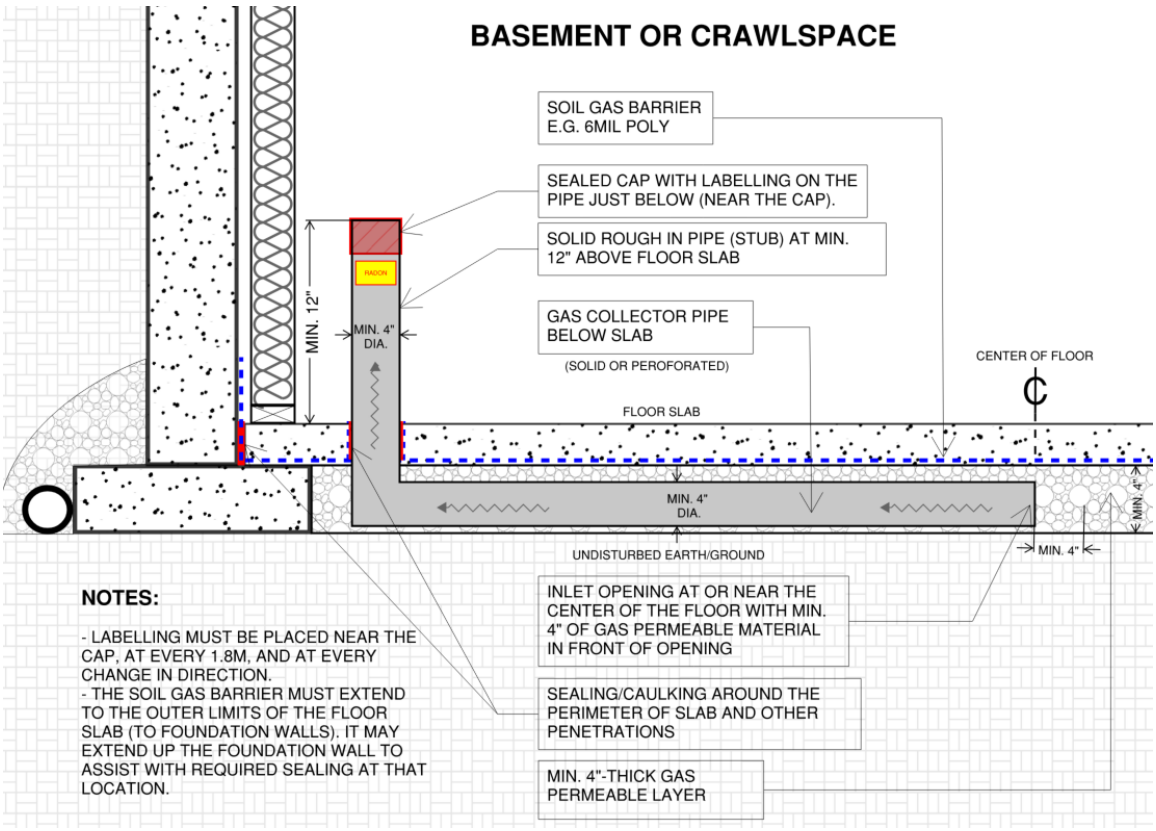
Radon rough-in pipe (stub)

- is a **solid** pipe with a minimum diameter of 4” and must be rated for the intended use (i.e., above or below ground)
- NOTE: Only the collector pipe, located at the under-floor level, may be perforated

- should extend minimum if 12” above the floor-on-ground in a location which allows for the future connection of an Active Soil Depressurization (ASD) fan; the ASD fan is not currently mandated
- must be capped, sealed to be airtight, and clearly labelled (near the cap) to indicate that it is intended only for the removal of radon from below the floor-on-ground

Soil gas collector pipe

- must have a minimum diameter of 4” and be rated for the intended use (i.e., for below ground use)
- has a sub-floor inlet (open end) which must be located near the center of the floor
- may be a solid or perforated pipe and is located within the gas-permeable layer between the ground and the soil gas barrier



3. Image of a drawing of radon rough-in (stub) and gas collector pipes.

When and how will the rough-in be inspected?

Pre-floor installation

Prior to the placement of the floor-on-ground (e.g. concrete floor slab):

- may be completed at the same time as the inspection of below ground plumbing
- all components must be visible for the Inspector to view (i.e., pipes must not be covered by stone or other floor finish):
    - Inspectors will check:
        - pipe material
        - location of the below-floor inlet(s) (open end) or continuity of perforated pipe, if used in a 'loop system' (see Figure 5)
        - gas permeable layer (thickness and material type)

Soil gas barrier inspection

Prior to the placement of the floor-on-ground (e.g., concrete floor slab):

- this takes place after the inspection of the above and below floor radon piping has been completed:
    - the attending Inspector may permit the completion of the pipe and gas barrier inspections at the same time, at their discretion
        - please speak to the Inspector to see if this may be accommodated
    - the Inspector will observe the entire surface area of the barrier to ensure that all joints and penetrations in the barrier material are sealed with tape or another approved product (penetrations may include plumbing or other service pipes, structural columns, etc.)
    - the gas barrier must be continuous without any rips or tears
    - the gas barrier must cover the entire floor area and extend from wall-to-wall

Pre-finish inspection

The rough-in stub must be:

- capped and sealed using approved solvent cement so that it is airtight (e.g., approved for use with the type of material installed) and,
- clearly labelled to indicate that it is intended only for the removal of radon from below the floor-on-ground
- the perimeter of the floor slab (where the slab meets interior and exterior walls), including all slab penetrations, must be sealed using an approved product
- this may be completed at the Occupancy Inspection, but must be before applying proposed interior floor and/or wall finishes

Are there exceptions?

The requirements outlined in this guide do not apply to:

- garages
- unenclosed portions of a building

What is required for a building permit application?

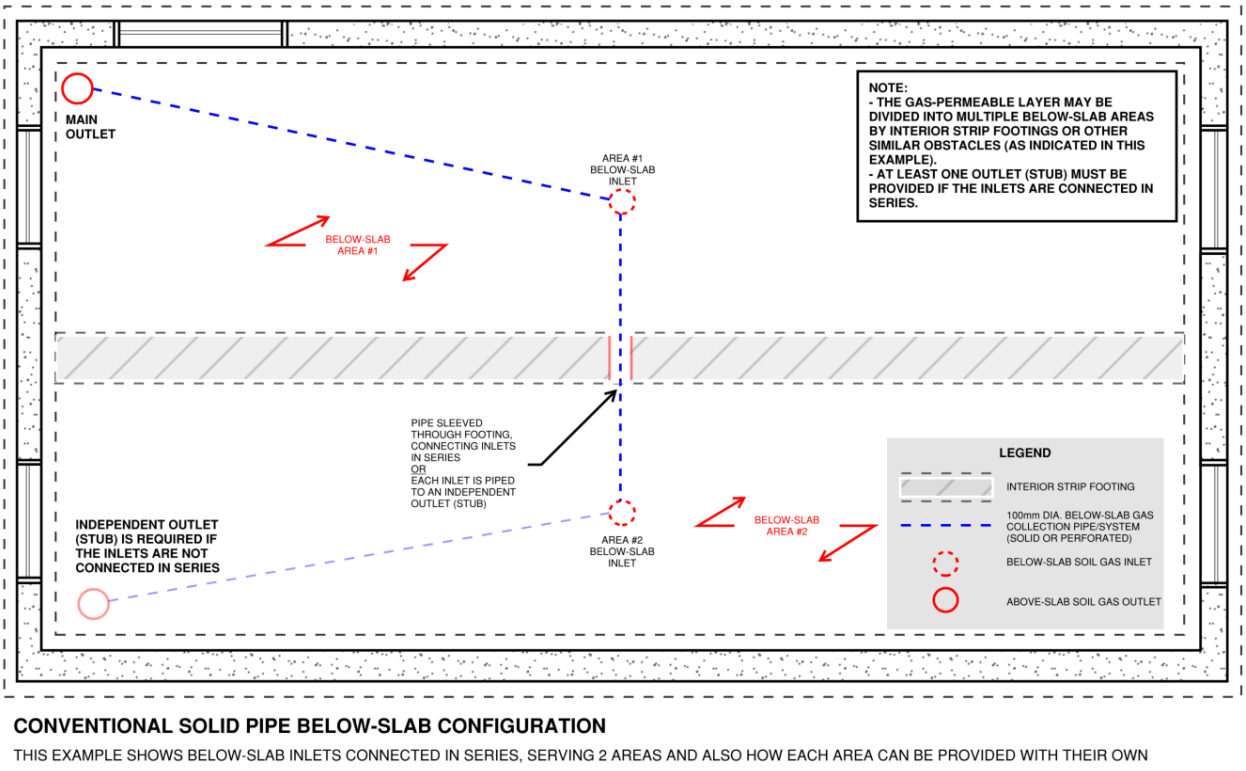
The design of buildings, within the scope and application of this guide, must meet the requirements set out in Part 9 of the OBC. Detailed layouts and specifications of the radon control system, while not mandatory, may help to expedite the OBC review portion of the permit application process. Permit application criteria can be found in the Building Permit Application Guide on the Township's website at severn.ca/building.

Additional resources

View the Ontario Building Code (2024)[2] and the Mandatory Requirements, specifically:

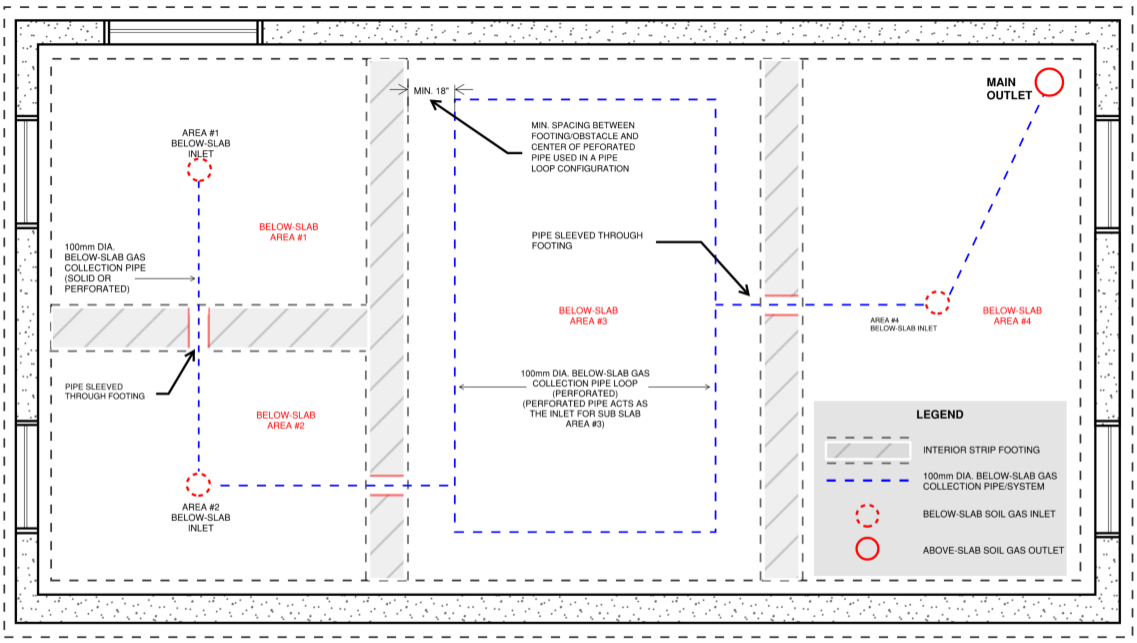
- sub-section 9.13.4. (Volume 1)
- sub-section 9.25.3. (Volume 1)
- Supplementary Standard SB-9, "Requirements for Soil Gas Control". (Volume 2)

Radon rough-in layouts (examples only)



4. Image of a drawing illustrating conventional solid pipe below-slab configuration.

[2] Government of Ontario, 2026. The 2024 Ontario Building Code. Accessed from: https://www.ontario.ca/page/2024-ontario-building-code.



ALTERNATIVE PERFORATED PIPE BELOW-SLAB CONFIGURATION (WITH 'LOOP SYSTEM') OPTION

IN THIS EXAMPLE, ALL BELOW-SLAB INLETS ARE CONNECTED IN SERIES

5. Image of a drawing illustrating alternative perforated pipe below-slab configuration (with 'loop system') option.