

Reviewed for Ontario  
Building Code Compliance.

Subject to Corrections Noted  
Plans and Field Inspections.

Permit: 21 104272 000 00 R9

Date: 05/19/21

Name: Laurie Smith

Approved by: 

# RADON GAS MITIGATION

## RESIDENTIAL REQUIREMENTS

### WHAT IS RADON?

Radon is a colourless, odourless and tasteless gas that is formed naturally by the radioactive breakdown of uranium contained in soil and rock. Normally radon escapes from the ground into the air where it mixes with fresh air resulting in concentrations too low to be a health concern. However, when radon enters an enclosed space through cracks or openings in floors in contact with the ground, or through foundations, it can accumulate to higher concentrations.

According to Health Canada, long-term exposure to radon is linked to approximately 16% of lung cancer deaths in Canada and is the second leading cause of lung cancer after smoking. Canada's radon guideline is currently 200 Bq/m<sup>3</sup> (becquerels per cubic metre). The only way to determine if radon levels are within the guideline of 200 Bq/m<sup>3</sup> is to carry out a test.

### RESIDENTIAL CONSTRUCTION REQUIREMENTS

All building permit applications for new construction, and additions to, low-rise residential buildings in the City of Hamilton are required to incorporate radon gas mitigation construction requirements in compliance with the Ontario Building Code. These requirements apply to the construction of new dwellings (including new laneway houses), and residential additions.

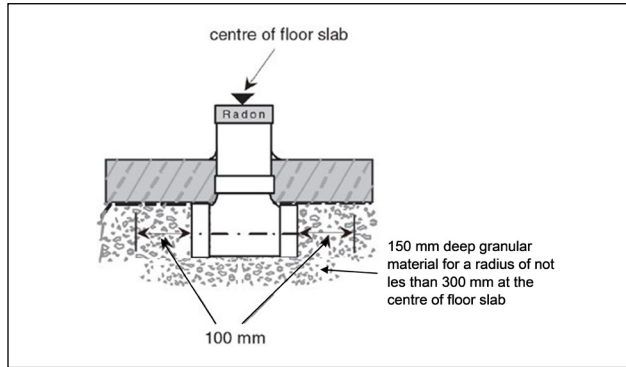
Building permit drawings shall clearly indicate details associated with one of the following three radon gas mitigation options in accordance with the Ontario Building Code (OBC).

(OBC Reference: Article 9.13.4.1., of Division B, and Supplementary Standard SB-9 "Requirements for Soil Gas Control")

# RADON GAS MITIGATION

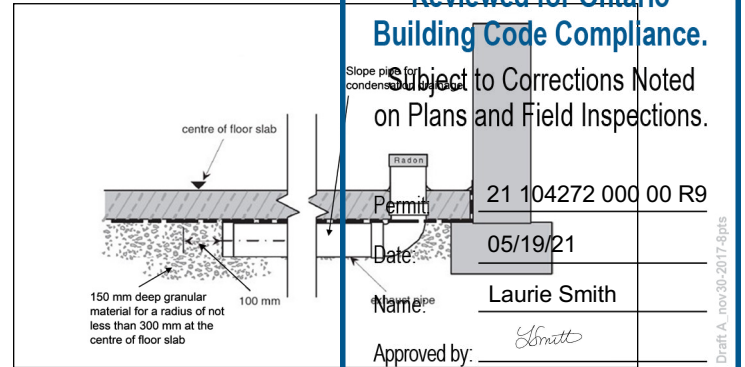
## OPTION 1: SUBFLOOR DEPRESSURIZATION ROUGH-IN

- 1) A 100 mm diameter grey PVC pipe rough-in,  
(OBC Reference: Subsection 3.2., Sentences (1) through (5) of Supplementary Standard SB-9)



Through the floor slab near the centre of the slab

OR

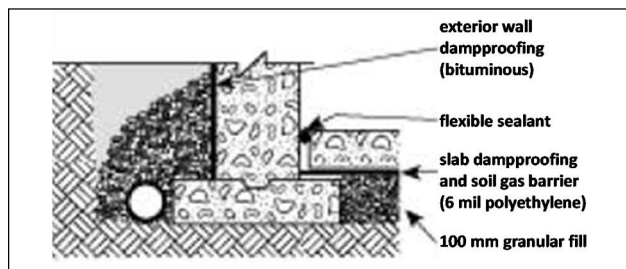


Adjacent to an exterior wall and extending under the slab and terminating at or near the center

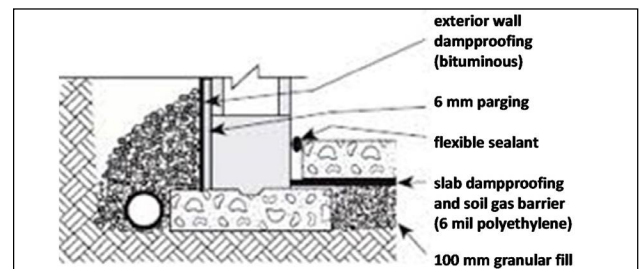
- 2) Minimum 150 mm granular material for a radius not less than 300 mm centered on the pipe, with the bottom of the pipe open to the granular,
- 3) The upper end of the pipe shall be provided with a removable seal and labeled to indicate for “Radon Gas Removal Only”, and
- 4) Mandatory radon gas testing (see “TESTING” below).  
(OBC Reference: Subsection 3.2., Sentence (6) of Supplementary Standard SB-9)

## OPTION 2: RADON GAS BARRIER

- 1) A soil gas barrier on the foundation walls (bituminous dampproofing), and  
(OBC Reference: Sentence 9.13.4.2.(3), of Division B)
- 2) Under the basement floor slab using 6 mil polyethylene lapped not less than 300 mm, and  
(OBC Reference: Figures SB-9A or SB-9B of Supplementary Standard SB-9)
- 3) Sealing along the perimeter of the basement floor slab and at all penetrations using flexible sealant (polyurethane caulking).  
(OBC Reference: Clause 9.13.4.2.(4)(a), of Division B, and Supplementary Standard SB-9)



Solid Foundation Wall



Hollow Foundation Wall

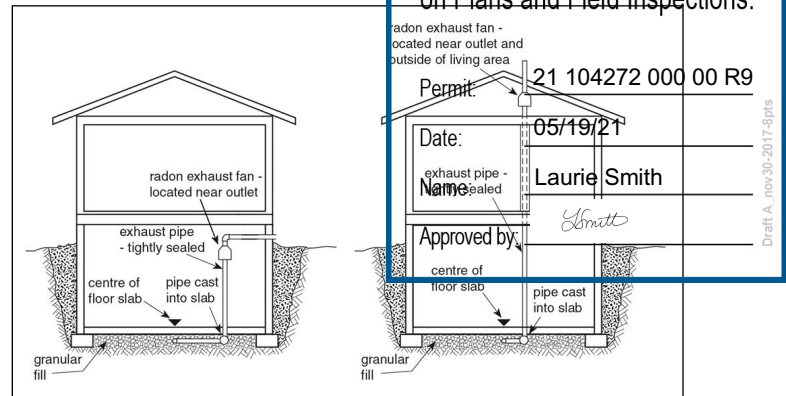
Please Note: Care must be taken when installing 6 mil polyethylene since it is prone to puncture. Please ensure the 6 mil polyethylene is adequately protected.



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### OPTION 3: ACTIVE SUBFLOOR DEPRESSURIZATION SYSTEM

- 1) A soil gas barrier on the foundation walls (bituminous dampproofing),  
 (OBC Reference: Sentence 9.13.4.2.(3), of Division B, and Figure SB-9A or SB-9B of Supplementary Standard SB-9)
- 2) Installation of a sub-slab depressurization system installed in accordance with the Canadian guideline "Reducing Radon Levels in Existing Homes: A Canadian Guide for Professional Contractors"
- 3) A properly labelled 100 mm grey PVC pipe shall be installed through the floor slab adjacent an exterior wall extending under the slab into a centrally located 150 mm thick bed of granular material, and  
 (OBC Reference: Subsection 3.2., Sentences (1) through (5) of Supplementary Standard SB-9)
- 4) Above the slab, 100 mm grey PVC piping shall be installed, extending either through the roof or the rim joist, and shall have a continuous duty centrifugal inline radon fan.



### REQUIRED INSPECTIONS

#### New construction and/or additions

The property owner or builder shall arrange for the following inspections:

- 1) Installation of the rough-in soil gas pipe and granular material prior to pouring the basement slab.
- 2) Installation of soil gas barrier on foundation wall (bituminous dampproofing) and under floor slab (6 mil polyethylene) prior to covering or pouring the basement slab.
- 3) Sealing of the perimeter of the slab adjacent to the foundation wall and any slab penetrations (polyurethane caulking) prior to covering.
- 4) Pipe cap and labelling and inline fan (where required) prior to occupancy.

### TESTING

#### New construction and/or additions

Depending on the radon gas mitigation option chosen by the builder, the building may be subject to mandatory radon gas testing.

It is the property owner's responsibility to conduct radon gas testing and submit the results to the City of Hamilton at [building@hamilton.ca](mailto:building@hamilton.ca).

All radon testing will consist of long-term tests (minimum 91 days) completed during the winter season (October to April), when windows and doors are generally closed, and are recommended to be carried out by a Canadian National Radon Proficiency Program (C-NRPP) certified professional.

# RADON GAS MITIGATION

## TESTING RESULTS

Where mandatory radon gas testing results come back above 200 Bq/m<sup>3</sup> (becquerels per cubic metre), the property owner is to:

- 1) Install an active subsoil depressurization system, (OBC Reference: Subsection 3.2., Sentence (9) of Supplementary Standard S-10.1)
- 2) Ensure any resultant decrease in soil temperature will not adversely affect the foundation. Noted documentation to this effect is to be provided by a qualified person, and Subject to Conditions on Plans and Field Inspections.
- 3) Submit test results indicating levels below 200 Bq/m<sup>3</sup> to the City of Hamilton.

Health Canada recommends hiring a professional certified under the Canadian National Radon Proficiency Program (C-NRPP), as lowering radon levels in a home requires specific technical knowledge and skills to ensure the job is done properly.

## TARION WARRANTY

New homes in Ontario come with a new home warranty that is provided by the builder and backed by Tarion. The warranty covers radon gas levels exceeding 200 Bq/m<sup>3</sup> in new homes for seven years from the date of occupancy.

## EXISTING DWELLINGS

Radon mitigation requirements do not apply to existing dwellings or retrofits for secondary dwelling units. If a homeowner wishes to conduct voluntary testing and mitigation, it is recommended they contact a Canadian National Radon Proficiency Program (C-NRPP) certified professional as indicated above.



Building Division

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To find a list of certified professionals contact the Canadian National Radon Proficiency Program (C-NRPP) at 1-855-722-6777, go to [www.c-nrpp.ca](http://www.c-nrpp.ca) or email [radon@hc-sc.gc.ca](mailto:radon@hc-sc.gc.ca).

# DO YOU REQUIRE MORE INFORMATION?



### MAILING ADDRESS

City Hall  
71 Main Street West,  
3rd Floor  
Hamilton, Ontario  
L8P 4Y5



### PHONE

905-546-2720  
MONDAY - FRIDAY  
8:30 am - 4:30 pm



### E-MAIL

[building@hamilton.ca](mailto:building@hamilton.ca)



### WEB

[www.hamilton.ca/building](http://www.hamilton.ca/building)

Information collected in the building permit application process, including personal information, is collected under the authority of the Building Code Act, 1992, S.O. 1992, Chap. 23 and is subject to the Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990, c. M.56.