

## **Radon Gas Mitigation Requirements**

Due to recent findings from a study conducted by Hamilton’s Public Health Services, the City of Hamilton’s Building Division is implementing radon gas control measures in new construction and additions of low-rise residential buildings. This program applies to new building permits applied for after November 16, 2020.

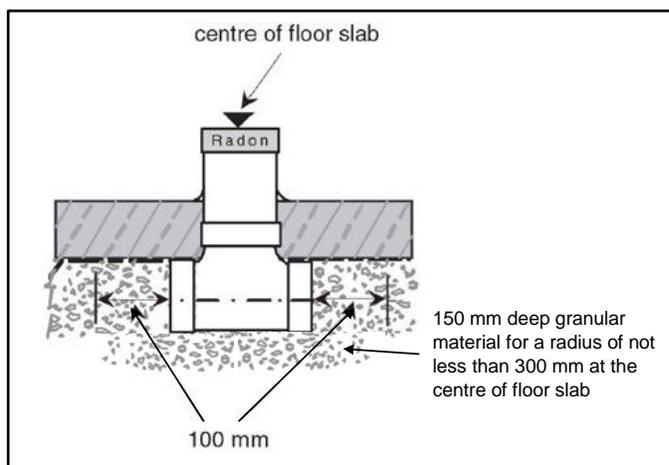
### **Construction Requirements**

Building permit drawings shall clearly indicate details associated with one of the following three radon gas mitigation options in accordance with Article 9.13.4.1, of Division B, and Supplementary Standard SB-9 (“Requirements for Soil Gas Control”) of the Ontario Building Code:

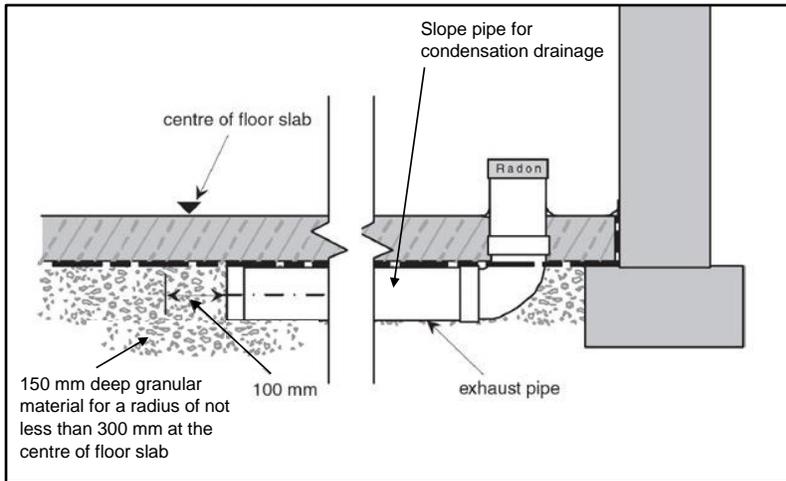
#### **OPTION 1: SUBFLOOR DEPRESSURIZATION ROUGH-IN**

- 1) A 100mm diameter grey PVC pipe rough-in through the floor slab near the centre of the slab (Figure 1) or adjacent to an exterior wall and extending under the slab and terminating at or near the center (Figure 2) in conformance with Subsection 3.2, Sentences (1) through (5) of Supplementary Standard SB-9,
- 2) Minimum 150mm granular material for a radius not less than 300mm 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 in conformance with Subsection 3.2, Sentence (6) of Supplementary Standard SB-9.

**Figure 1: OPTION 1 with exhaust pipe at centre of floor slab**



**Figure 2: OPTION 1 with exhaust pipe adjacent to foundation wall**

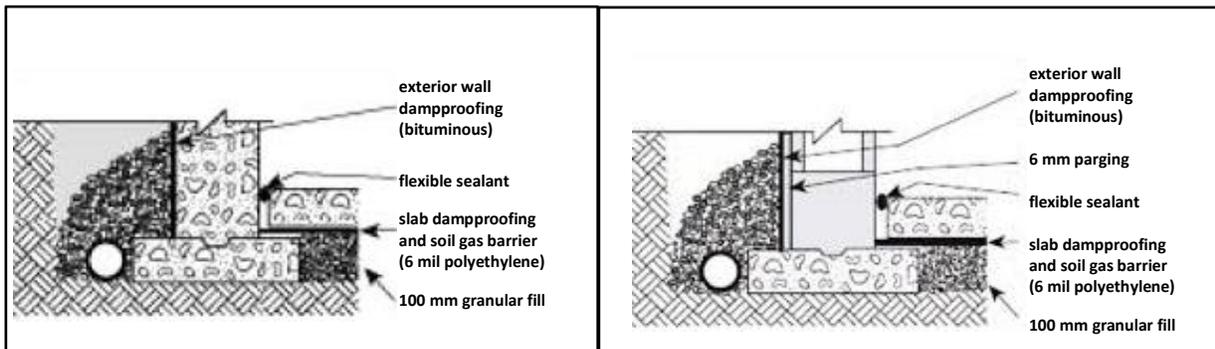


**OPTION 2: RADON GAS BARRIER**

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

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.

**Figure 3: Option 2 – Damproofing and soil gas control at floor and wall junction**



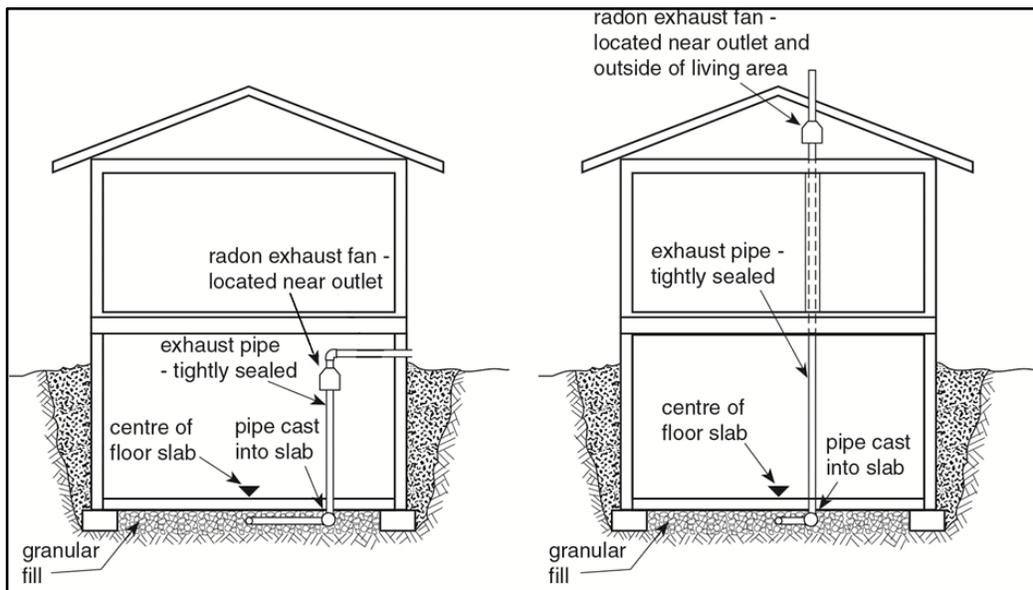
**Solid Foundation Wall**

**Hollow Foundation Wall**

### **OPTION 3: ACTIVE SUBFLOOR DEPRESSURIZATION SYSTEM**

- 1) A soil gas barrier on the foundation walls (bituminous dampproofing) in conformance with 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 Health Canada guideline "Reducing Radon Levels in Existing Homes: A Canadian Guide for Professional Contractors".
- 3) A properly labelled 100mm grey PVC pipe shall be installed through the floor slab adjacent an exterior wall extending under the slab into a centrally located 150mm thick bed of granular material. In accordance with Subsection 3.2, sentences (1) through (5) of Supplementary Standard SB-9, and
- 4) Above the slab, 100mm 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 (figure 4).

**Figure 4: Option 3 – Active Subfloor Depressurization System**



### **Required Inspections**

The owner of a property on which construction takes place or their authorized agent shall arrange for the following inspections:

- 1) The installation of the rough-in soil gas pipe, and granular material prior to pouring the basement slab.

- 2) The 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

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

It is the Owners responsibility to conduct the radon test to determine the radon concentration in the building 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.

## Testing Results and Mitigation

The following is required where mandatory radon gas testing results come back over 200 becquerels per cubic metre (Bq/m<sup>3</sup>):

- 1) The Owner is responsible for mitigation and installation of an active subsoil depressurization system in conformance with Subsection 3.2, sentence (9) of Supplementary Standard SB-9.
- 2) Measures shall be taken to ensure that any resultant decrease in soil temperature will not adversely affect the foundation, and documentation to this affect is to be provided by a qualified person.
- 3) After installation, the Owner is to submit testing results indicating levels below 200 Bq/m<sup>3</sup> to the City of Hamilton at [building@hamilton.ca](mailto:building@hamilton.ca).

Health Canada recommends that you hire 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. 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).

## **Tarion Warranty**

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