



REGIONAL
DISTRICT
OF NANAIMO

Radon Control Guidelines

March 20, 2024

RADON CONTROL FOR PART 9 BUILDINGS FOR BUILDING PERMIT APPLICATIONS AFTER MARCH 7, 2024

Purpose

The 2024 BC Building Code (BCBC) requires that all new buildings designed under Part 9 of the Code that contain conditioned space, must have a roughed-in radon mitigation system installed. The following information will provide clarification for typical installations to ensure minimum building code standards are met.

Background and References

Radon is a colourless, odourless, radioactive gas that occurs naturally because of the decay of radium. It is found to varying degrees as a component of soil gas in all regions of Canada and is known to enter dwelling units by infiltration into basements and crawl spaces. The presence of radon in sufficient quantity can lead to an increased risk of lung cancer.

The potential for high levels of radon infiltration is very difficult to evaluate prior to construction and thus a radon problem may only become apparent once the building is completed and occupied. Therefore, various sections of Part 9 require the application of certain radon exclusion measures in all conditioned buildings. These measures are:

- low in cost
- difficult to retrofit

The principal method of resisting the ingress of all soil gases, a resistance which is required for all buildings (see BCBC Sentence 9.13.4.2.(1)), is to seal the interface between the soil and the occupied space, so far as is reasonably practicable. BCBC Sections 9.18. and 9.25. contain requirements for air and soil gas barriers in assemblies in contact with ground, including those in crawl spaces. Providing control joints to reduce cracking of foundation walls and airtight covers for sump pits are other measures that can help achieve this objective.

Select BCBC and CAN/CGSB 149.11 excerpts:

BCBC

9.13.4.3. Rough-in for a Subfloor Depressurization System

(See Note A-9.13.4.3.)

1. Floors-on-ground shall accommodate the future installation of a subfloor depressurization system by installing a radon vent pipe, and a contiguous gas-permeable layer between the air barrier system and the ground consisting of
 - a. a material or materials that allow effective depressurization of that space (see Sentence 9.16.2.1.(1)), or
 - b. not less than 100 mm of coarse clean granular material containing not more than 10% of material that would pass a 4 mm sieve.



2. The radon vent pipe required by Sentence (1) shall
 - a. be sealed to maintain the integrity of the air barrier system, with no perforations along the pipe above the air barrier system,
 - b. have one or more inlets that allows for the effective depressurization of the gas-permeable layer (see Note A-9.13.4.3.(2)(b) and (3)(b)), and
 - c. permit connection to depressurization equipment,
 - d. where it passes through conditioned space, be completely surrounded by conditioned space,
 - e. consist of pipe and fittings in accordance with 7.1.3 of CAN/CGSB-149.11, “Radon control options for new construction in low-rise residential buildings,”
 - f. terminate outside the building in a manner that does not constitute a hazard,
 - g. be installed to prevent the accumulation of moisture and away from locations where snow and ice accumulate, and
 - h. be clearly labeled every 1.2 m and at every change in direction to indicate that it is intended only for the future removal of radon from below the floor-on-ground.

3. A radon vent pipe shall be deemed to comply with
 - a. Clause (2)(b) where its inlet or inlets below the air barrier system are located at or near the centre of the floor-on-ground with gas-permeable material extending not less than 100 mm beyond any inlet, and
 - b. Clause (2)(f) where it terminates outside the building, not less than 1.8 m from a property line, and located in accordance with either 7.2.4.6 or 7.3.4 of CAN/CGSB-149.11, “Radon control options for new construction in low-rise residential buildings,” with the opening of the pipe fitted with a corrosion-resistant screen or grille with a mesh opening size of 10 mm to 12.5 mm or a product of equivalent air flow performance.

CAN/CGSB 149.11

Table 7.2.4.6 — Minimum passive radon stack termination clearances for roof top discharge

Location	Minimum dimension (m)
Vertical clearance above the roof at the point of penetration	0.30
Vertical clearance <u>above</u> windows or doors	0.60
Vertical clearance <u>above</u> mechanical air supply inlet (air intake)	0.90
Horizontal clearance from windows, doors or mechanical air supply inlet	3
Clearance horizontally from a vertical wall that extends above the roof penetrated	3

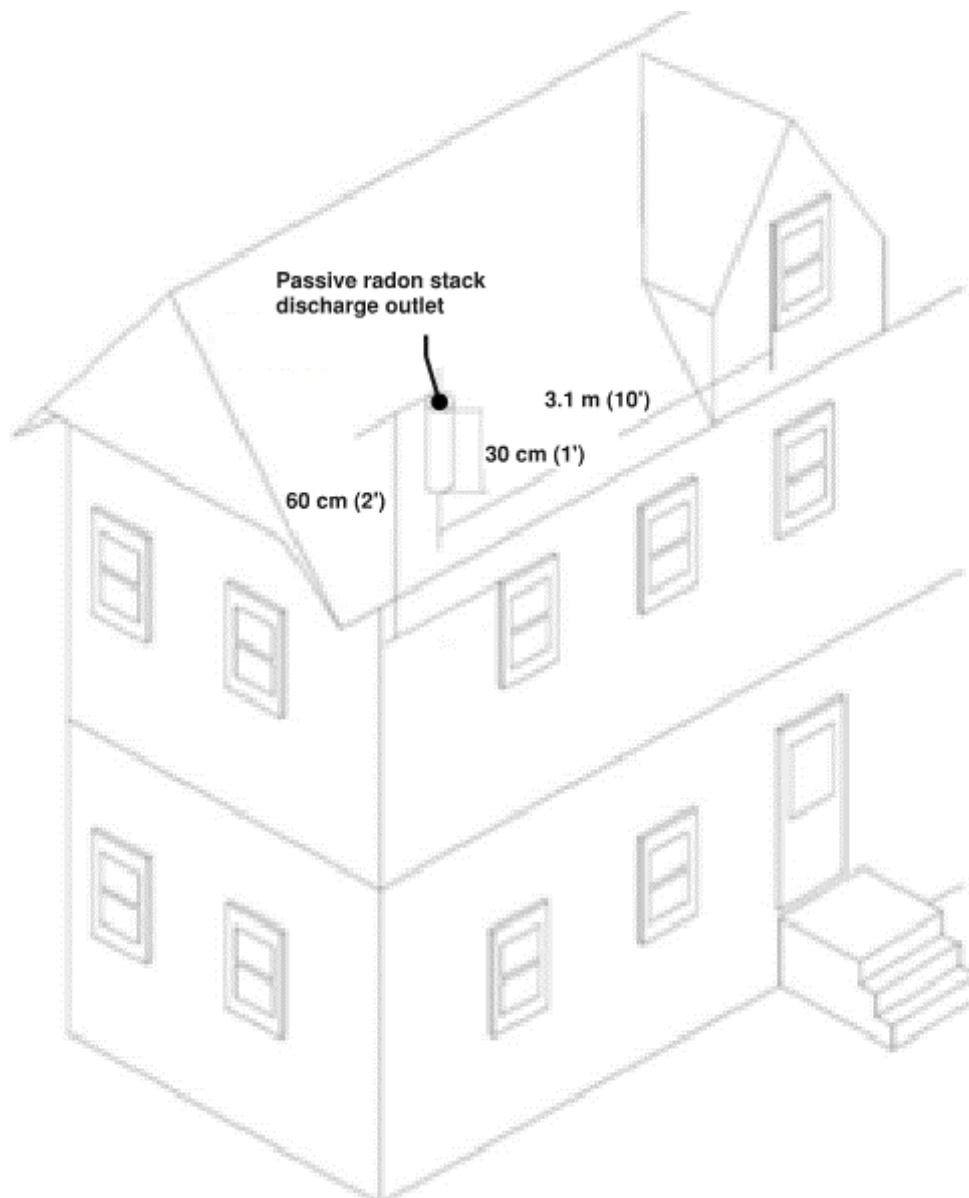


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Drawing Information





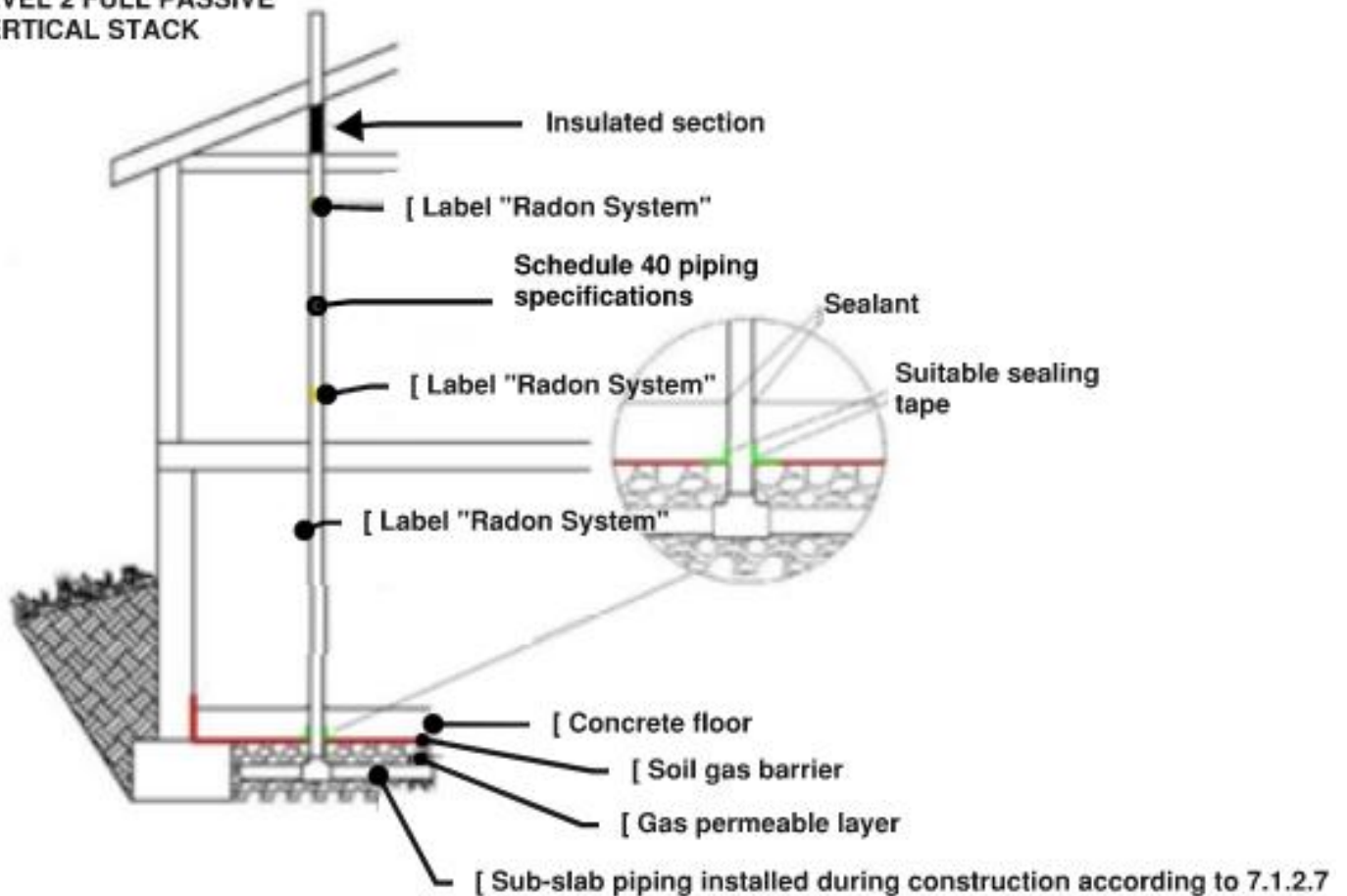
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LEVEL 2 FULL PASSIVE VERTICAL STACK



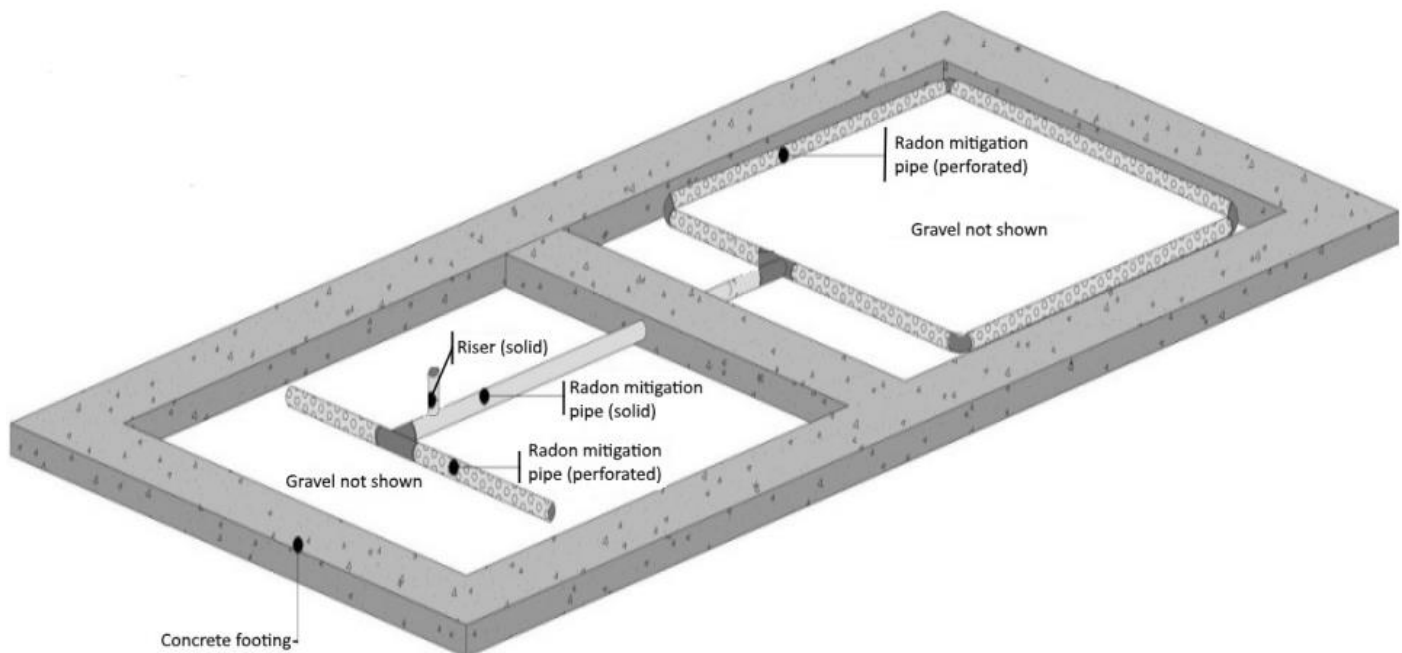


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Note: Drawings must show the location of the slab penetration for the radon pipe.

Inspections

Under slab air/vapour barrier inspections will now also include a review of how effective the sealing of the polyethylene is to the foundation and any penetrations of the slab. An appropriate sealant and or tape is to be used for the sealing of joints, penetrations, and slab perimeter. Note that slab knockouts for the installation of tub and shower drains must be filled with concrete after trap installation. Additional sealant must be applied to perimeter joints between the slab and wall or curb to be reviewed at later inspections. Pipes located in unconditioned spaces must be insulated.

See [CAN/CGSB-149.11-2019](#) for complete requirements.

For Further Information

[Radon and Lung Health | BC Lung Foundation](#)

[Radon control options for new construction in low-rise residential buildings CAN/CGSB-149.11-2019](#)

[Radon | Canadian Cancer Society](#)

[Radon guideline - Canada.ca](#)