RADON CONTROL FOR PART 9 BUILDINGS 2018-004

Plan and site installation requirements for under-slab radon control (2018 BCBC amendments)

Purpose

The 2018 BC Building Code has identified the City of Abbotsford as having elevated or high levels of Radon. The following information will provide clarification for typical installation standards to ensure minimum Building Code standards are achieved for the under slab radon barrier and rough-in subfloor depressurization system for all buildings intended to be occupied on average for greater that 4 hours within a 24 hour period (Residential and Non-Residential)

Background and References

What is Radon?

Radon is a colourless, odourless, radioactive gas that occurs naturally as a result of the decay of radium. It is found to varying degrees as a component of soil gas in all regions for 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.

Outdoor air entering a dwelling unit through above-grade leaks in the building envelope normally improves the indoor air quality in the dwelling by reducing the concentrations of pollutants and water vapour. It is only undesirable because it cannot be controlled. On the other hand, air entering a dwelling through below-grade leaks in the envelope may increase the water vapour content of the indoor air and may also bring in a number of pollutants picked up from the soil. This mixture of air, water vapour and pollutants is sometimes referred to as “soil gas.” One pollutant often found in “soil gas” is radon.

Implementation (all permits applied for on or after December 10, 2018)

Since radon has been identified, owners and or builders shall be responsible for ensuring that the Air Barrier and the subfloor Radon depressurization details are provided at the time of the permit review and installed for the required under-slab radon inspection. Alternatives should be reviewed with the Building Official prior to installation.

Drawing Details

Permit drawings shall indicate:

- Slab details showing sealing of poly joints, edges and penetrations. This includes provisions for floor drains and sump pumps. See suggested details Attachment 01
- Location of rough-in subfloor depressurization system. Please note that discontinuous areas such as slabs at different elevations or areas separated by interior footings must either be separately vented or connected with a solid pipe to one location. Floor plans and/or section should indicate the pipe location venting through the roof. Attachment 02

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(Side wall venting is an option but not as preferable for passive stack affect and complications with clearance requirements. Contact the Building Department)

Inspections

Under slab radon control: after installation of under slab plumbing but prior to placing concrete. Hydronic heating systems will require the review of the poly and subfloor depressurization system prior to installation of insulation and heating tubes.

The under slab poly inspection will consist of a review of:

- Sealing of air barrier joints and edges
- Sealing around penetrations including floor drains and plumbing knock outs and sumps
- Providing for the Rough-in for a Subfloor Depressurization System. See Attachment 02.

Building Officials will also review, at later inspections (i.e. framing), that the edges of the slab and around penetrations are caulked after the concrete slabs have been poured.

Because the BC Building code does not require a fan, there are no requirements specific to radon mitigation that the fan must comply with, other than to be air tight. A fan installed along the radon vent pipe must maintain the air-tightness of the radon vent pipe and maintain the integrity of the air barrier system in order to limit leakage from the radon vent pipe into the building.

Please contact the Building Department at 604-864-5525 or building-info@abbotsford.ca

Attachments
Attachment 1 – slab details
Attachment 2 – rough-in depressurization piping requirements

Building Standards – Information Bulletin No. B14-07 – New radon rough-In requirements Ministry of Health - Radon

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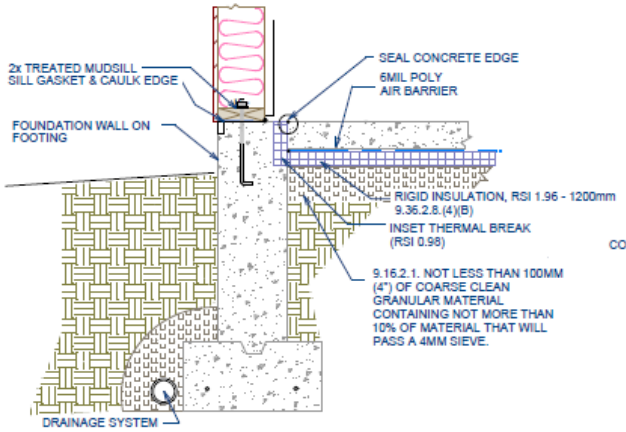
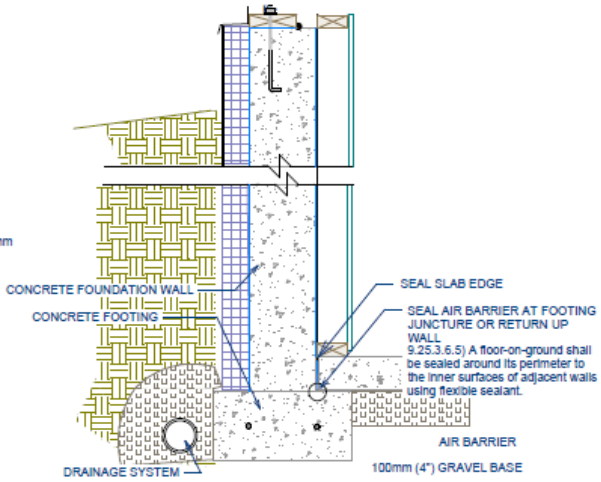
Attachment 1
9.13.4 Soil Gas Control

Acceptable details to complete radon requirements using 6mil poly membrane
(refer to 9.36.2.8 for insulation requirements

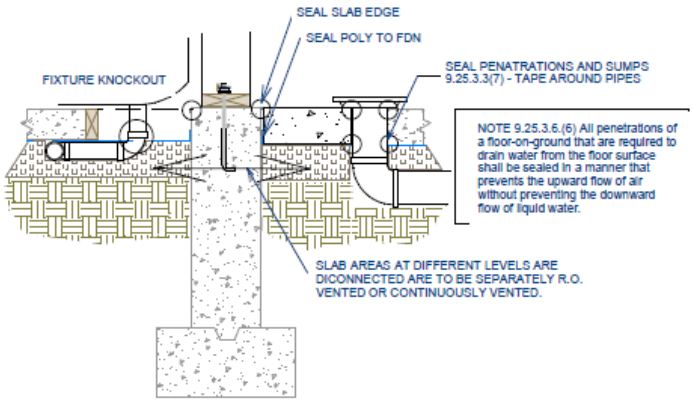


CONCRETE SLAB AT GRADE

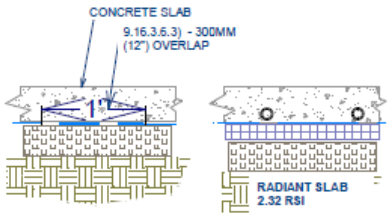


BASEMENT FOUNDATION WITH FINISHED WALL (2.98 RSI)

SUGGEST APPLYING A 600MM (24") STRIP OF 6MIL POLY AROUND PERIMETER OF SLAB SEALED TO FOUNDATION THEN OVERLAY WITH REMAINING AREA SECTION. USING A PEELASTICK MEMBRANE ALONG THE POUR LINE MAY ALSO MITIGATE DAMAGE TO SEAL AT SLAB EDGES.



INTERIOR FOUNDATION AND PENETRATIONS



9.25.3.2.(2) Air Barrier System Properties - CAN/CGSB-51.34-M, "Vapour Barrier, Polyethylene Sheet for Use in Building Construction,"

9.25.3.6.3) Where the air barrier installed below a floor-on-ground is flexible sheet material, joints in the barrier shall be lapped not less than 300 mm. (See A-9.25.3.6.(2) and (3) in Appendix A.)

SLAB DETAILS

Note that an alternative for the 100mm (4") granular material has been registered through the Canadian Construction Material Centre (CCMC)
Please refer to product registration and installation requirements – Radon Guard (Evaluation #13698-R) manufactured by Fox Architecture – Under-slab EPS board with channels for ventilation.

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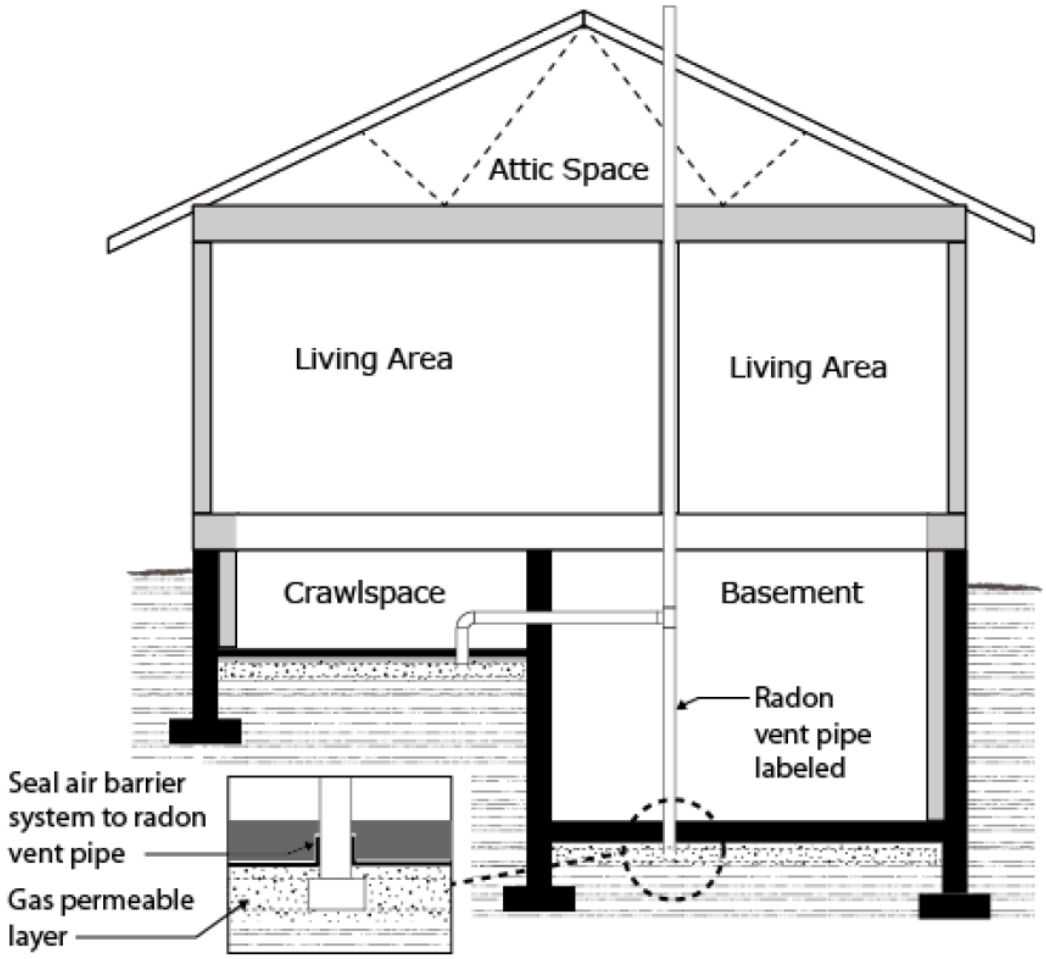
Attachment 2
9.13.4.3 Rough –in for a Subfloor Depressurization System



9.13.4.3. (3)(b) – Radon Pipe
A radon vent pipe not less than 100 mm in diameter that is constructed so as to be air-tight and installed through the floor-on-ground such that

I. it opens into each contiguous area of the granular layer required by Clause (a) and not less than 100mm of granular material projects beyond the terminus of the pipe measured along its axis (see A-9.13.4.3(2)(b)(i) and (3)(b)(i) in Appendix A);
II. it terminates not less than 1m above and not less than 3.5 m in any other direction from any air inlet, door or openable window;
III. it terminates not less than 2 m above and not less than 3.5m in any other direction from a roof that supports an occupancy;
IV. it terminates not less than 1.8 m from a property line;
V. it is shielded from the weather in accordance with Sentence 6.2.3.12.(3);
VI. it is protected from frost closure by insulating the pipe or by some other manner, if subject to frost closure;
VII. the accumulation of moisture in the pipe is prevented; and
VIII. it is clearly labelled "RADON VENT PIPE" every 1.2 m and at every change in direction.