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Slab Insulation Guidelines

No.: PERMITS-61

Date: 2023-08-01

This bulletin is to inform Owners, Designers, Registered Professionals, and Contractors of the requirements of slab-on-grade insulation for Part 9 buildings.

Background

As City of Richmond moves towards net-zero ready Part 9 buildings to accommodate the market, thicker slab insulation will be required. As a result of using thicker slab edge insulation, there has been reported cracking in the slab interior flooring.

Implementation

Slab Edge Insulation

1. The rigid foam board insulation **up to 3"** thickness can be installed either on the interior side of the foundation wall (*Figure 1*) or to the exterior side of the foundation wall (*Figure 2*).
2. Slab edge insulation **thicker than 3"** shall be installed:
 - To the exterior side of the foundation wall (*Figure 2*); or
 - Additional layer of foam board insulation shall be added to the exterior side of foundation wall in addition to 3" interior thermal break (*Figure 3*).
3. The exterior foam board insulation shall cover the entire foundation wall from the bottom of exterior walls down to concrete footing completed with protection board against physical and solar damage.
4. Technologies such as ICF (Insulated Concrete Form) is also recommended when a high thermal break R-value is required.

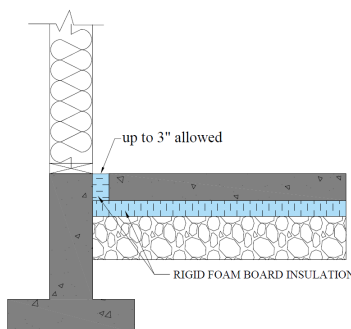


Figure 1

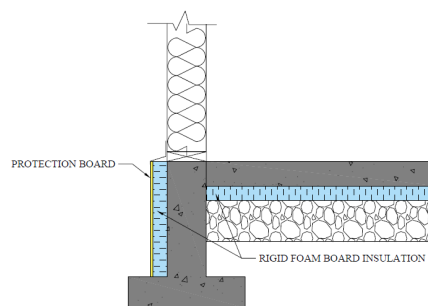


Figure 2

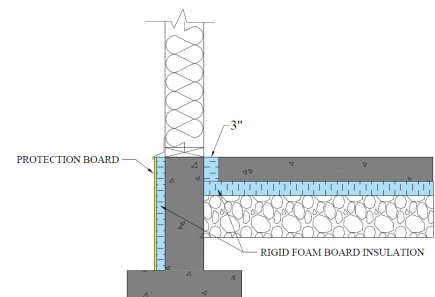


Figure 3

For homes built on slab-on-grade, the perimeter and the underside of the slab are both parts of the thermal envelope and shall be insulated.

See over →

Under Slab Insulation

1. Place rigid foam board insulation between the top layer of granular fill and the concrete slab.
2. The heated and unheated slab on grade shall have full under slab insulation.

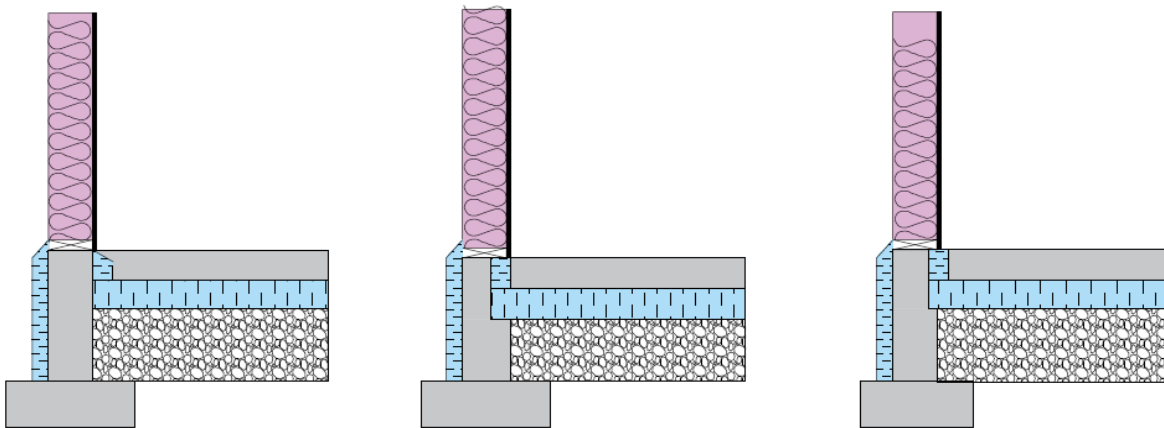
Energy Modeling Tips

For Part 9 buildings, the HOT2000 software used for energy modeling has limitation to model slab insulation when different R-value on slab edge and under slab is applied. The table below provides instructions for modelling common combinations of slab insulation.

Under Slab Insulation	Slab Edge Insulation	Equivalent R-value for Slab with Thermal Break
6" EPS [R24]	3" EPS [R12]	R22
6" XPS [R30]	3" XPS [R15]	R28
6" XPS [R30]	3" EPS [R12]	R27
4" XPS [R20]	3" EPS [R12]	R18
4" XPS [R20]	3" XPS [R15]	R19

Perimeter Slab Insulation Tips

In order to avoid bringing the perimeter insulation to the top of slab edge or minimizing the gap between slab edge and drywall so a carpet tack strip or floor tiles can be safely attached, following configurations are recommended:



References

- [BC Building Code](#), Section 9.36.2: Energy Efficiency for Housing and Small Buildings – Building Envelope
- [Energy Efficiency Requirements for Houses in British Columbia: Climate Zone 4](#)

Should you have any questions, comments, or suggestions concerning this bulletin, please email building@richmond.ca or call the Building Approvals General Inquiries line at **604-276-4118**.