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Radon Mitigation: Passive & Active Strategies

Audience Q&A

Steve Dacus
PE, LEED AP
PRINCIPAL | INTERFACE ENGINEERING
o 503.382.2661 c 503.860.2459

Jeff Humphreys
AIA, GGP, LEED AP, BD+C
PRINCIPAL | MACKENZIE
o 971.346.3769 c 503.887.2700

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Does the amount of radon change when a building is surrounded by grass / green area vs a more urban setting with hard surfaces?

Radon comes from underlying soil, rock, and groundwater; its concentration varies geographically and geologically, and building depressurization can draw it through cracks and joints. An undeveloped site cannot be meaningfully tested because a building is needed to trap the gas. For a specific building, use local radon mapping and test the completed or existing structure. Surrounding a building with more landscaping will not impact the amount of radon within the building footprint.

Can a crawl space be an active or passive way to mitigate radon vs the pipe systems?

Yes. For residential construction with a crawl space, the radon vent can extend into the crawl space and discharge outdoors. An active system includes a fan; a passive system does not, although provision can be made for a future fan. For an open shelf-basement/ crawl-space condition, a vapor barrier, ventilation or exhaust, and radon testing is recommended.

What is Oregon's attitude about sawcut control joints in SOG? We need to enlarge all control joints to 1/4" and seal?

Control joints in occupied areas subject to radon-mitigation requirements should be sealed. A sawcut control joint is intended to provide a location for a crack to develop and therefore can become a radon pathway. Blades used for sawcut control joints come in both 1/8" and ¼" thick. If you provide a joint at least 1/4 inch wide and 1/4 inch deep and fill it with an elastomeric sealant, it will be consistent with Oregon's treatment of cracks greater than 1/16 inch. This requirement would only apply to occupiable spaces. Oregon requires a special inspection before finish flooring is installed so that cracks can be observed and remedied as appropriate.

Have an example of a thickened edge slab on grade termination detail?

For a thickened slab edge, it is suggested to carry the soil-gas retarder membrane beneath the slab, down and around the thickened edge, and then up the opposite face, coordinated with the perimeter insulation, so the barrier remains continuous and sealed.

How are radon systems added to existing slab on grade buildings? Do you have to bore out for the pipes underground?

It is not recommend boring below the existing slab as the default approach. Oregon and Washington requirements discussed in the webinar apply to new construction and exempt existing construction. For an existing slab-on-grade building, it is recommended first testing for radon, then considering HVAC measures that bring in sufficient outdoor air and maintain positive building pressure relative to the space below the slab. Under-slab retrofit work may be possible but could be cost-prohibitive.

Can you penetrate inner sectioning foundation walls with the pipe and still have one fan riser for 15,000 sf?

No. If below-grade foundation or stem walls divide the under-slab area into separate volumes, each volume must be treated as a separate zone with its own riser. A pipe cannot simply pass through an interior foundation wall to combine the volumes under one fan riser. The 15,000-square-foot allowance applies to a connected hybrid active system with the prescribed perforated-pipe network, not to separated under-slab volumes.

In Portland a lot of single family homes have a shelf basement where part of the basement is open to a crawl space. How does the crawl space affect the plan?

The crawl-space portion should still be treated as a radon-control area. It is recommended installing a vapor-barrier membrane over the exposed soil, maintaining the required membrane continuity and seals, ventilating or exhausting the crawl space, and testing the home for radon. Because the shelf basement is open to the crawl space, the plan should address both areas together so gas from the exposed-soil area is not drawn into the occupied basement.

Where does the 6" dia SSESD pipe requirement come from? Per OSSC 1812.2.6 states one 3- or 4-inch diameter pipe?

The 6-inch SSD riser requirement comes from OSSC Section 1811.2.5, which requires each SSD for public/general building applications to consist of one 6-inch-diameter solid pipe. OSSC Section 1812.2.6 is the residential R-2/R-3 provision and allows one 3- or 4-inch-diameter solid pipe. Using the 6-inch size as their standard, more conservative detail across conditions; the larger pipe provides less airflow resistance.

Mat slab conditions?

For a mat slab, maintain a continuous soil-gas retarder beneath the entire slab and seal all penetrations, joints, and perimeter terminations. Because the thick reinforced mat limits future access, coordinate the under-slab collection layer and perforated piping with the structural design before the pour. Any grade beams or thickened portions that divide the sub-slab area into isolated volumes should be treated as separate zones, each with its own collection connection or riser rather than relying on one pipe through the foundation element.

In residential construction with a crawlspace, would an active ventilation fan installed in the crawlspace be sufficient to minimize radon infiltration into the home?

An active crawl-space ventilation fan may help, but it should not be treated as sufficient by itself without testing. It is recommended covering exposed soil with a sealed vapor-barrier membrane and using ventilation or exhaust to prevent radon from entering the occupied space. The system must discharge outdoors, avoid creating negative pressure that draws soil gas into the home, and be verified with post-installation radon testing; if levels remain elevated, a dedicated active soil-depressurization system may be needed.

Thank you for joining us!