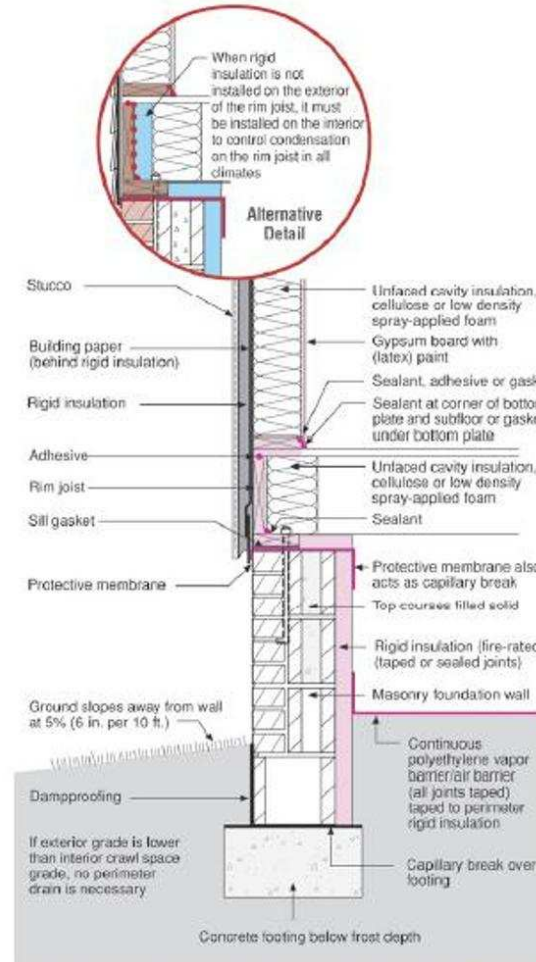


# CONDITIONED CRAWL SPACE PERMIT GUIDE



The Department of Permits and  
Inspections



## Conditioned Crawl Space

### Abstract

Conditioned crawl spaces perform better than vented crawl spaces in terms of safety, health, comfort, durability and energy consumption. **Conditioned crawl spaces also do not cost more to construct than vented crawl spaces.** Existing vented crawl spaces are experiencing serious moisture and mold problems and are costing builder's and homeowners significant resources to repair. Despite the obvious problems with existing vented crawl spaces and the obvious benefits of conditioned crawl spaces there is not a significant trend towards the construction of conditioned crawlspaces. One of the reasons typically cited by builders and designers is **"the code does not allow me to build unvented crawl spaces"**. This is both generally correct and misleading. The model codes do not allow the construction of "unvented" crawl spaces – except in very limited circumstances, but they do **allow** the construction of **"conditioned" crawl spaces. The distinction is important and necessary.**

### Background

Crawl space venting is generally viewed as good practice despite the obvious moisture problems that occur when outside air with a dew point higher than interior crawl space surface temperature is permitted to enter a crawl space. Unvented, conditioned crawl spaces with insulation on the perimeter solve this problem. Unvented, conditioned crawl spaces with insulation on the perimeter perform better in terms of safety and health (pest control), comfort (warm floors, uniform temperatures), durability (moisture) and energy consumption than passively vented crawl spaces with sub floor insulation.

Perimeter insulation rather than floor insulation performs better in all climates from an energy conservation perspective. The crawl space temperatures, dew points and relative humidities track that of the house. Crawl spaces insulated on the perimeter are warmer and drier than crawl spaces insulated between the crawl space and the house. Cold surfaces that can condense water are minimized when crawl spaces are conditioned.

Crawl spaces should be designed and **constructed as mini-basements**, part of the house – within the conditioned space. They should be insulated on their perimeters and should have a continuous sealed ground cover such as taped polyethylene. They should have perimeter drainage just like a basement when the crawl space ground level is below the ground level of the surrounding grade.

### **Constructing Conditioned Crawl Spaces**

Crawl spaces should be designed and constructed to be dry. A dry crawl space is less likely to have pests and termites and mold. A dry crawl space is therefore safer and healthier than a wet crawl space. Crawl spaces must control rainwater, groundwater and provide drainage for potential plumbing leaks or flooding incidents (Figure 1).

Crawl spaces must always have a drying mechanism. One of the most effective ways to provide a drying mechanism to a crawl space is to condition a crawl space by heating and cooling the crawl space as if the crawl space is included as part of the home.

Crawl spaces must always have a ground cover that prevents evaporation of ground moisture into the crawl space. There are many ways to provide a durable ground cover or liner. Most effective is 6 mil sheet polyethylene that has taped/sealed joints and that is attached to the crawl space perimeter walls. This ground cover must be continuous through piers and supports.

Crawl space perimeter walls should also be insulated. When insulating crawl spaces internally (as well as basements) it is important to not leave concrete or masonry exposed in order to control condensation. It is similarly necessary to control condensation at rim joist areas. This is best done using rigid insulation installed either externally to the rim joist or internally against the rim joist.

### **Code References**

International Energy Conservation Code.  
2004 Supplement to the IECC

IECC, Section 402, Building Thermal Envelope

IRC, Section R408.3, Unvented Crawl Space

**The bottom line is that crawl space ventilation is not required by the model codes if:**

**a ground cover is provided  
the perimeter walls are insulated  
the crawl space is conditioned**