

City of Hendersonville, TN
Department of Building and Codes

Unvented Crawl Spaces

This information is intended to assist with the correct installation of unvented crawl spaces. Although the Permit Holder always has the choice as to whether or not the crawl space will be constructed as vented or unvented, once the decision is made to either insulate the foundation walls or to insulate the floor system there is no longer any option. If the foundation walls are insulated, the crawl space is then required to be unvented per IECC402.2.9 of the IRC. If the floors are to be insulated, the crawl space is required to be vented per R408.1 and R408.2 of the IRC.

IECC 402.2.9 Crawl space walls. *As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and the vertically and/or horizontally for at least an additional 24 inches. Exposed earth in unvented crawl space foundations shall be covered with a continuous Class 1 vapor retarder in accordance with the International Building Code. All joints of the vapor retarder shall overlap by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall.*

There are multiple components involved in the proper construction of an unvented crawl space. All of the following items are required to be addressed:

- Dampproofing/Waterproofing of the foundation per R406.1 and R406.2
- Continuous foundation drain per R405.1 as amended
- Vapor retarder per R408.3
- Foundation perimeter walls insulated per IECC 402.2.9
- Foundation vents are not to be installed
- A means to supply conditioned air to the crawl space or a mechanical exhaust system per R408.3, as amended

As an alternative to the minimum underfloor ventilation requirement for vented crawl spaces (R408.2), unvented crawl spaces can be achieved by one of the following methods, with option #1 & #2 being the most common:

1. Continuously operated mechanical exhaust ventilation at a rate equal to 1 cfm for each 50 sq. ft. of **crawl space floor area**. Should a return pathway to the common area (such as a duct or transfer grill) be installed then an acceptable system must be provided to insure acceptable air quality is being transferred to the common area.
2. Conditioned air supply sized to deliver at a rate equal to 1 cfm for each 50 sq. ft. of **under-floor area**. Should a return pathway to the common area (such as a duct

or transfer grill) be installed then an acceptable system must be provided to insure acceptable air quality is being transferred to the common area.

3. Plenum complying with section M1601.4 if under-floor space is used as a plenum. M1601.4 through M1601.4.5 of the IRC.

Option 1: Continuously operated mechanical exhaust ventilation method.

- Properly water proofed or damp proofed foundation per local code
- 4" exterior foundation drain with silt sock
- Properly graded crawl space grade per local code
- 6 mil vapor barrier that has lapped and sealed seams and extends 6" and attached to perimeter foundation walls
- Foundation perimeter walls insulated per section IECC 402.2.9
- No foundation perimeter vents
- An air pathway into the main living area of the home; i.e. Living Room
- Continuously operated mechanical exhaust ventilation at a rate equal to 1 cfm for each 50 square feet of floor area.
- The exhaust fan shall be installed in such a manner that notification of operational failure is provided.

Option 2: Conditioned area supply method.

- Properly water proofed or damp proofed foundation per local code
- 4" exterior foundation drain with silt sock
- Properly graded crawl space grade per local code
- 6 mil vapor barrier that has lapped and sealed seams and extends 6" and attached to perimeter foundation walls
- Foundation perimeter walls insulated per section IECC 402.2.9
- No foundation perimeter vents
- An air pathway (return) into the main living area of the home; i.e. Living Room
- Conditioned air supply sized to deliver at a rate equal to 1 cfm for each 50 square feet of floor area.

It is important to note this Department is certainly willing to accept alternative methods should they be properly substantiated and then approved by the Building Official or his designated representative prior to installation.

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