RLC ENGINEERING, LLC
DEDICATED TO IMPROVING THE PERFORMANCE OF RESIDENTIAL AND LIGHT COMMERCIAL BUILDINGS

Termites and sealed crawl spaces

An opinion paper by
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Successful moisture control in some crawl spaces requires complete coverage of the soil with a ground cover and the elimination of ventilation. One of the major concerns with sealing a crawl space is the lack of ability to inspect for and treat termite infestations. In a vented crawl space with floor insulation, foundation walls are more accessible, and supposedly easier to treat and inspect. In a sealed, unvented crawl space, ground covers and/or insulation often cover the inside of the foundation walls, supposedly rendering inspection and treatment more difficult.

Treatment and inspection of termites in South Carolina are controlled by several issues: 1) SC Pest Regulations, 2) Termiticide labels, 3) EPA Pesticide rules (PR-Notice 96-7), and 4) Pest Control Company liability and insurance issues. This paper will discuss the ramifications of these issues when dealing with sealed crawl spaces.

Dealing with 100% Ground Cover: The first step in controlling moisture in a crawl space, whether sealed or vented, should be a ground cover over 100% of the soil. (Of course, exterior surface and rain water need to be dealt with correctly, as well.) Since significant moisture can enter a crawl space through that part of the foundation wall below grade, RLC Engineering, LLC's recommendation is to continue the ground cover up the foundation wall to at least the level of the exterior soil. (In a retrofit situation, this ground cover can stop six to eight inches below the mud sill to allow for a termite inspection strip.)

When a ground cover is installed to or even up the foundation wall, the customary trench-and-flood application of termiticide is difficult. To perform this application, the ground cover must be moved. PCO's are reluctant to perform this function because of the economics involved as well as liabilities associated with disturbing this system.

An alternative approach to applying the termiticide is to inject the chemical though the ground cover, similar to applying the chemical through a concrete slab. This can be performed by applying a "basement" classification to the crawl space. The termiticide chemical can be injected through the ground cover as if the ground cover was a slab. I.e. if the chemical label calls for injection at no more than 12 inch spacing, use the same spacing to inject through the ground cover. With a short nozzle, the nozzle can be pushed

through the ground cover material. Resulting holes in the ground cover do not need to be filled, because the crawl space is not a "commonly occupied space." The holes also do not need to be filled from a moisture stand point, because an insignificant amount of moisture will migrate up through the holes.

To prevent splash-back of the chemical through the holes, use a 4-way nozzle that distributes the liquid chemical in a more horizontal direction. In certain circumstances, the termiticide can be applied as a foam to ensure complete coverage of the area between the injection holes, and to reduce the likelihood of splash-back. With a thin ground cover such as 6-mil polyethylene, injecting foam will provide better coverage than injecting through a slab because of the ability to determine when the cavity under the soil cover is filled.

Dealing with Concealed Foundation Walls: From an energy stand-point, insulating foundation walls is more energy efficient and economical than insulating the underside of the floor above the crawl space. (With open web floor trusses, insulating the floor is often very ineffective because of the inability to create a continuous thermal barrier.) When ducts are located in a crawl space, insulating the foundation wall is even more cost effective. Therefore, the second part of sealing a crawl space is insulating the foundation walls.

When the foundation walls are insulated, inspecting for termite activity is more difficult and can be nearly impossible. At the same time though, inspecting an insulated crawl space wall is no different than inspecting the foundation wall of a finished basement.

The specifications for sealing a crawl space published by RLC Engineering, LLC include the installation of a metal termite shield that protrudes to the inside past any foundation wall coverings. With the use of this termite shield, inspecting a crawl space with covered foundation walls is actually easier and more effective than inspecting a finished basement wall.

From a physical standpoint, a sealed crawl space with insulated foundation walls is no different than a finished basement. A 6-mil ground cover is no different than a thin concrete slab. SC Pest Regulatory Standards, chemical manufacturer labels, and EPA requirements do not prevent treating a sealed crawl space differently than a finished basement. Insurance issues should not be a concern for the same reason, as long as due diligence and proper procedures are followed. RLC Engineering, LLC will provide support in treating a sealed crawl space as a finished basement.

Treatment alternatives: A couple treatment alternatives exist for dealing with sealed crawl spaces. The Sentricon bait system can be used in lieu of soil treatment with appropriate use of SC Pest Regulatory Waivers and Disclosures. If accepted by EPA, new labeling of Termidor will allow treatment of only the exterior perimeter of a foundation. These systems would remove the requirement to treat the inside of the crawl space perimeter.

Some spray-applied cellulose insulation is treated with a borate additive that performs as a termiticide as well. If this material is used to insulate the interior of a crawl space foundation wall, the potential for termite access via a “finished” foundation wall is significantly reduced.

References:

PR-Notice 96-7
Section D.2.a on post-construction treatment of accessible crawl spaces says ".....When soil type and/or conditions make trenching prohibitive, rodding may be used....."

Section D.2.B on inaccessible crawl spaces says you can drill into the crawl space and spray.

Section F on foamed termiticides says "...Applications may be made ... into block voids or structural voids ...or to the soil in crawlspaces”, and other similar voids.

Section H on plugging holes says "..."All holes in commonly occupied areas into which material has been applied must be plugged...."