

GREEN TECH THE SERIES COLUMN FOR AUGUST 19, 2015
HEADLINE: CRAWL SPACE INSULATION FOR THE SPA

Our latest project, Circa 1894 B&B and Day Spa is 90% complete. Starting this week, we begin a series on the assembly and development, as well as on how we used some advanced methods of energy conservation, sustainable and recycled materials, including reusing all the shower water for the toilets. We will highlight the trades who “bought into the concept” of this unique building and brought their professional expertise to support the project. The decks and landscape work are also nearly done. Our entrance has been causing turned heads from passing motorists.

One area that has caused a lot of conversation with everyone involved is how we “finished” our crawl space, so I felt it was worth a column here. Readers may recall that the spa was built on “footing tubes.” A complete skirting was assembled around these concrete columns to provide finished exterior “foundation” walls. The argument, in regard to crawl spaces has been whether to vent, not vent at all, to heat or not and where exactly to insulate. These points have caused more than one coffee discussion amongst contractors and that discussion continues to this day.

For years, the method of choice for a block or poured concrete crawl space has been to add inside wall vents, allowing the crawl space to breathe; to insulate the space between the floor joists; to wrap any plumbing and duct work and to live with the winter dampness, or, in many cases, year round dampness. We missed the fact that a crawl space is just a low basement and should be treated as such. Ignoring the drainage around the home, failing to use correct downspouts and to properly discharge rain away from the home will result in water and dampness in a crawl space, a common problem.

One method was to insulate the space between the floor joists. They were insulated using fibreglass batts, which picked up moisture over time, sometimes resulting in mold. Very few and I mean very few, ever saw an air barrier. Even then, if the plastic barrier was positioned it was on the wrong side. For instance, if it was attached to the floor joists after the insulation was installed problems resulted. Most often I see the older batts with the paper tabs stapled to the joists, however; they make a great home for rodents, too.

If you have a crawl space with excessive moisture, you must address that first. Just how do we correct this moisture issue? In the case of an older home, dig

down and install a 20mil layer of plastic, sloped from the foundation. Next add a layer of washed stone around the outside of the building and finish with landscaping is one answer. Excavation and adding a drainage system is a costly answer, but, in some cases, it may be the only one. Most crawl spaces don't need that extreme a solution, however.

In our case, we are fortunate to be located on the top of a hill, so drainage is not an issue. While renovating the church (www.alltechgreenchurch.ca) and having spent weeks researching this topic, talking to a number of "experts," I eventually arrived at a definitive answer among the possibilities - closed cell spray foam. It should be noted that each home should be treated individually. Along with the insulation value, it's now recognized that any foundation can benefit structurally from an even layer of closed cell foam.

But before the foam could be sprayed on, the first step was to look at a covering for the dirt and rock floor. While there are many suppliers of crawl space liners, with each having particular benefits, most are expensive and lack a radiant value, so the floor decision came down to a selection between two materials.

In my research for our church project, I discovered that this reflective foil insulation, which comes in 4 feet wide by 62.5 foot long rolls, is manufactured by Ayr-Foil and has a long list of benefits, besides its toughness. It is non-toxic and non-allergenic; reflects up to 97% of radiant energy; prevents insects and rodents from nesting; is 100% water proof; creates a thermal break; does not shrink and the reflective surface is mold-resistant.

The only catch, however, was that it only came in the four foot wide rolls and I wanted a continuous covering, with no seams over the dirt and stone crawl space floor. The answer was a bottom layer of 6mil plastic, which fit the bill perfectly. Into the crawl space we went and first laid a layer of plastic and taped the seams, then rolled out the Ayr-foil. After taping the foil seams, we had a waterproof cover with a reflective insulation covering. The added benefit is the toughness of the foil; it allows us to crawl around for service on the plumbing and other systems, when needed. You can buy heavy liners, up to 20 mil is available, but I am pleased with how our solution works.

Once we finished laying the 6mil plastic and then the foil liner, we prepared it for the complete liner of close cell spray foam that infilled the entire skirting, including onto the foil, making a complete seal.

Having had such a good experience with this method, it was a given that we would use it again this time around. When I designed the heating system, taking into consideration the assembly methods and the complete 2 lb. closed cell

application, I found that the entire crawl space, 840 sq. ft., needed only a single 500W electric heater. We now have a “conditioned space” for our plumbing and heating, along with a moisture free crawl space.

Next week we will introduce you to one of the, if not the best closed cell foam installation crews that I have ever experienced, Jeff & Dave from Kingston Spray Foam.

Questions or Comments: Cam Allen L.I.W. NHI ACI LEED Green Assoc
E-mail: cam@alltechconsultinggroup.com