

GREEN TECH THE SERIES COLUMN FOR APRIL 13, 2016  
HEADLINE: FLAT ROOF HOMES ARE COMING!!

When we were building Circa 1894 Day Spa last year, I had more than one comment from the trades and visitors as to why I designed the building with a flat roof. They are such a problem, or so the “old wives tales” go. Well, in fact, it was not flat, we had trusses designed for 1.5/12 pitch to allow good climatic flow off the roof. At minimum, an almost flat roof should have at least a ¼” per foot pitch to shed water. Flat roofs can also eliminate an attic, such as we did. We had the entire building, walls and ceilings spray foamed. This became our air barrier and sealed the building up tight. In the truss roof space, at R52 it is well over the code for insulation values. No ventilation in the attic issues here; no attic!

I have felt for years that we are wasting a lot of time in assembly, certainly materials and ease of access for repairs, by limiting ourselves to pitched roof assembly. I constantly got shot down with argument from those citing, “snow load issues;” “flat roofs leak;” “they don’t last as long and they look ugly, like a commercial building” and, in fact, these opinions were difficult to argue against. Today, however, this is slowly changing. Recently, the Katilin Group convinced the Town of Clarington, located just outside Oshawa, to allow them permission to build a group of homes with modern designs, including low slope roofs. I have seen the proposed designs and they made excellent use of brick and stone exterior veneers, blending traditional colors into the designs.

The biggest argument was that snow load was an issue. Snow load affects all roof assemblies. It is known that fresh snow, at six inches, weighs about 1.5 lbs. per square foot. Once it gets to 2 feet thick, it gets up to 6.5 lbs. per sq. ft. The concern is that wet snow can weigh up to 10 lbs. per sq. ft. of roof and, if it reaches two feet, snow does get very heavy, now averaging about forty lbs. per sq. ft. With today’s engineered trusses and the code standards, however, designing for snow load is well within architectural capabilities. In fact, if you talk to an architect, designing for snow load is one of the easiest things to design for. The other plus that is not considered is the fact that the insulation value for snow is around R-1 per inch, which means a foot of snow adds on average, an

additional R-12 to the home at the time of year when thickness of insulation really matters.

As to the argument that they leak; yes they can leak and so can any kind of roof if it's not installed properly. Substrate preparation and workmanship can make or break any roof covering installation. Coupled with this leak argument was the idea that they don't last as long, but that is not the case. The one area where a low pitch roof has to be designed right is that there has to be a lead or drip edge that is water tight so no water can leak back inside the building from the edge of the roof. At one point, the most common method of flat roof covering was tar and gravel and this was only done by a professional roofer. Today, this method is slowly dying as, not only cost, but the insurance that the roofing contractor has to carry using this hot mix/torch method has driven most roofers out of this type of roofing. Today there are numerous types of flat and low slope roofing materials on the market. Membrane materials like EPDM, TPO and PVC roof coverings have taken over the market with EPDM rubber type membrane leading the pack. These should be installed by a professional roofer. With respect to warranty, I have heard year ratings for EPDM upwards of 20-30 years; GAF TPO advertises 35 years and I have heard lifetime on PVC. I admit I long ago looked at roof covering warranties with some skepticism, what is advertised rarely happens and this holds true for shingled roofs, as well as flat roofs.

There is another kind of flat roof covering that has been developed more recently. It can be applied by anyone with reasonable construction skills and is called SAM (self-adhesive membrane) roll roofing. The larger manufacturers all make this type of roofing. GAF calls theirs "Liberty;" IKO calls theirs "Roof-Fast," and Resisto call theirs "Cap-Sheet Membrane." I used this type of roofing and, this time last spring, researched them all. We went with Resisto, due to their installation methods and expected life span. IKO wanted three layers to get 15 years; GAF was more expensive. The Resisto, two ply method, with an expected 20 years, fit our needs.

The last argument was that they look ugly. Well, if designed right I disagree and the Katilin folks have shot that myth down. When maintenance is needed, I would rather be working on a near flat surface than off of a pitched roof. As well, flat roofs can be cheaper to repair, today. Some years ago, I had a flat roof on a large garage and, during one very snowy winter, all around us, neighbors were struggling with snow rakes and shovels removing snow off their pitched roofs. We hoisted a small snow blower up on the garage roof, set the chute slides high and it took us no time to clean that roof off; a lot safer too.

Lastly, was the cost for our spa roof and, when I factored in the wood assembly labour and materials for a pitched roof and cost of shingles, there was little difference for us. Well-designed pitched roofs with dormers and varying roof levels do look sharp, however, I believe that with the development of far better flat roof coverings and the desire to improve energy efficiency, the days of attics and pitched roofs are numbered.

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