# Using Unicrete Lightweight Roof Tiles for Re-roofing Applications

The question is often asked of us; “Will my roof take the added weight of Unicrete roof tile?” Unicrete endorses the use of our lightweight roof tile for re-roof applications on typical truss homes, and we are ready to resolve any problems that might be caused by the extra roof loading. This endorsement does not apply to our regular weight Estate or to our Slate profile tiles. The lightweight tile roofing material dead load is approximately 7.73 lbs. per sq. ft. (psf). This is not a significant load change (about 3 lbs. more than an existing wooden roof, or about 1 lb. more than 3 layers of standard asphalt shingles) on a typical truss designed for a minimum of 34 psf. The 1997 UBC 1516.3 "Overlay on Existing Wood Roofs or Asphalt Shingle Roofs" has always allowed for up to 3 layers of asphalt shingles or 1 layer over a layer of cedar shakes/shingles to be installed in typical re-roofing situations. The weight issue is implied in the document as 3 layers of older 210lb or 235lb.asphalt will weigh a minimum of between 6.3 psf. and 7.05 psf., and a layer of asphalt over wood shakes will weigh in at around 7 psf. – about the same as the lightweight tile roof weight. This has been common practice/knowledge by roofers everywhere, and all parts of both USA and Canada have many such applications.

The CSA-A220 Series06 “Concrete roof tiles” standard, which is the regulating document for concrete tile installations in Canada, requires that an engineering review be preformed only where a concrete roof tile that has a mass per unit area weight of over 40Kg/M² (8lbs.psf), is replacing a lighter roofing material. As Unicrete lightweight roof tile falls under this weight, it is exempt from needing this review. We in Calgary have seen many applications where regular weight tile applications have been installed over asphalt shingle roofs. We do not endorse this, but having seen a number of these applications perform well for more than 20 years, it does demonstrate that there are no weight issues, as shown from a proven historical basis in excess of 1000 homes to date. This is especially true when we compare lightweight tile roofing applications at 7.73 lbs. per sq. ft. as compared to these historical applications that would come in around 12 psf.

The Alberta Municipal Affairs Safety Council Standard of April 2003, in recognizing that insulated attics are not used for storage, allows for using the actual dead load (typically about 3lbs) for bottom load truss design rather than the 7lb. typically factored in to these trusses. This allows the extra 4 lbs. to then be brought up to the top chord loading in the design where it makes more sense. Unicrete lightweight tile will only add between 2 and 4 lbs. to the existing overall loading.
In addition, there are large safety margins built into the trusses; the 25% extra for the dead load and the 50% extra for the live load, wind and slope factors, lumber grading safety factors, bending, compression, and tension resistance safety factors, and margins of safety built into the software programs themselves. When adding less than an extra 10% to a typical truss design that already has a large safety factor built into it, there is room for engineering discretion.

In some areas such as Calgary and Medicine Hat where the ground snow load is listed at 1.1 kPa (23 psf), there is an added 8 lb psf. safety factor built into the roof trusses as well. This is due to the fact that the minimum code permitted snow load that can be factored into the truss design is 1 kPa. Even though the ground snow load is generally factored down by.55 for normal residential truss design, in areas already listed at the 1 kPa minimum, this factoring is not done. Rather than using the .55 x 21psf to reduce the roof snow load to 13 psf, it is kept at 21 psf for the live load. In effect this means that we end up with the same strength built into the truss in a 1 kPa ground snow area, as in an area that has a 1.8 kPa or 38 psf ground snow load listing even though the ground snow load potential is 17psf (.8kPa) more elsewhere. Having examined hundreds of structures with our consulting engineer, and having a historical evidence that now goes back to 1979, we at Unicrete are very comfortable endorsing the use of our lightweight tile on any code built application.

For additional information on Unicrete Concrete Roof Tiles please contact the Unicrete office.