

The membrane of a conventional roof assembly is visible when you stand on the roof. You may see a white, grey, black or coloured granulated surface which likely means you have a modified bitumen-based membrane of two or more layers. A roof covered with dime-sized gravel embedded into a black asphalt-based membrane is likely a built-up roof (known as a BUR) consisting of multiple layers of asphalt and felt. Or you may see a black, rubbery surface, which is likely a single-ply EPDM membrane. There are many other membrane possibilities, but these systems are a few of the most common assemblies we see in the Eastern Ontario market.

On conventional low slope roofs, it is common to see puddles of water collecting in unintentional depressions on the roof surface. The rule of thumb is that if the water evaporates within 48 hours, it is of no concern. If the water lingers and keeps the roofing membrane saturated, the membrane can experience premature aging and failure. Owners can perform preventative maintenance by ensuring roof drains are regularly checked and cleaned to reduce ponding.

If you can't see the roofing membrane because it is covered in a layer of rocks or concrete pavers, you likely have a protected assembly, sometimes called an inverted roof. The membrane is applied directly to the structural roof deck (concrete, fluted steel, or in some cases wood sheathing) and then covered with insulation boards (usually extruded polystyrene foam) held in place with rocks or paving stones to anchor them against movement from wind uplift.

As the name implies, the membrane is protected by the insulation and ballast which can extend its lifespan if it is well-designed, installed and maintained.

All insulation
 Requires firm adhesion
 Or it will go bye.

The September tornados in the National Capital Region resulted in a number of roofing failures across the city. Though most systems are unable to withstand a direct hit from a storm of this magnitude, several failures in areas outlying the storms' centres brought to light the importance of detailed design and quality control to resist increasingly severe weather events. Even if damages are covered under insurance policies (not all are), upgrades that improve performance or energy efficiency are not covered. The re-roofing phase is a good time to look closely at the design and function of the roof and see if it is worthwhile to pay a little more to increase the lifespan of the roof with higher quality membranes or to reduce heating and cooling costs with higher insulation levels. Roofing consultants can help determine which is the best option for your project.

To sum up the book and one of Carl's best observations regarding roofing failures and how to avoid them:

Materials don't fail
 They obey physical laws
 We don't use them right.

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