

Never too late to plug a leak

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As cement concrete is not absolutely impermeable, it allows water to seep through. With the passage of time, reinforced cement concrete roofs develop fine cracks that allows easier passage to water. Hence a protective coating must be applied to the top surface of the concrete to prevent damage through water seepage.

The protective coating should be more impervious, and the top surface must have a slope to facilitate drainage of rainwater. Various types of protective coatings are available such as mud pucas and brickbat coba. As these coatings have low wear resistance, they require some type of wear resistant surfacing, such as brick tiles and thin concrete surfacing.

But these protective coatings have limited durability, i.e. they lose their function as a waterproofing material with time. A roof structure built today may not show any sign of leakage, say, within five years, but after that period its proper functioning depends on the workmanship and choice of proper materials at the time of construction.

Construction stage

In the market there are various chemicals (additives), which can make concrete more impermeable at the construction stage. A concrete made with Portland cement, sand, stone chips and water can at times develop loose pockets of concrete while it is being compacted. A chemical known as plasticizer reduces the water permeability of concrete and increases its homogeneity, thus reducing the chances of loose pockets during compaction. Leading construction chemical manufacturers such as Cico Technologies Ltd, Fosroc, MBT or Degussa, MC Bauchemie, and Sika are some of the companies that prepare plasticizers. The cement concrete will behave still better if some integral waterproofing compound (IWC) is mixed in the concrete. The IWC reduces the pore (microscopic holes) inside the concrete.

Another external waterproofing layer is to be provided on top of the mother slab. This can be done with

polymer modified cement compound (PMCC). All the leading manufacturers market the product having acrylic polymer and copolymers which are used with cement to form a slurry that is applied on properly prepared concrete surface.

As the treatment, which is done on the mother concrete is in the form of a very thin layer (about 1mm thick), and keeping in mind our hot climate, the top roof requires thermal insulation. Various types of insulating

layers are possible and these are covered with brick tiles, glazed tiles, or sand cement plaster. Another type of waterproofing using tar-felt had been in vogue for about 40-50 years. The tar-felt was made of Hessian cloth impregnated with tar or bitumen, which was laid over the top surface of roof in layers.

Unfortunately, with the passage of time the basic tar or bitumen gets oxidised and becomes brittle, making it unsuitable for waterproofing and required replacement. As a coat of tar or bitumen had to be put on top of concrete as a binding (tacking) medium, removal of this particular bond coat is difficult at the time of replacement. Nowadays better membranes having synthetic resin matrix along with modified bitumen are available which have better durability.



Mix an integral water proofing compound in the concrete to reduce the pores that develop

Post construction

For existing roofs having leakage problem, a generalised solution is difficult to provide. The reasons and causes of the distress need to be diagnosed for specific remedy. The remedy maybe a very simple one like clearing or cleaning the drainage outlet or it may be a complete replacement of the system.

Call someone who is a specialist and the final remedy will be his recommendation and the availability of adequate funds. Most of the leading manufacturers mentioned earlier have their approved agents or applicators who could be called for waterproofing problems whether pre or post construction.

A costly solution can be the application of liquid applied membranes which when dried forms a joint less, seamless single piece of membrane. ♦

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