

## Water Proofing of Slopped and Curved Roofs

[Excerpts from Dr. Fixit Healthy Construction Booklet "Construct Your Ideas", 2012, pp.17 and 27]

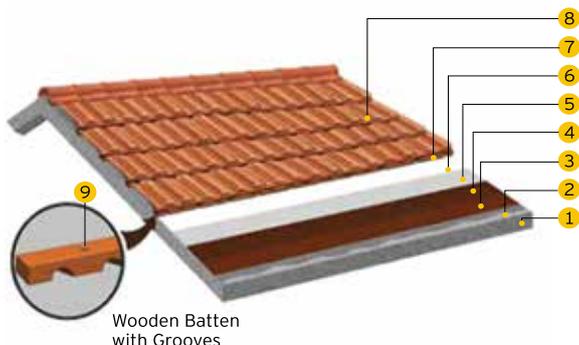
### 1.0 Introduction

The satisfactory performance of roof deck mainly depends upon the waterproofing system of the deck slab by considering proper roof covering materials, water proofing systems, flashing, fittings and other accessories that may be required depending on the profile of the roof.

### 2.0 For Pitched Tiled (With Battens) Roofs

#### 2.1 Surface Preparation

The surface shall be cleaned thoroughly of all contaminants like dust, traces of curing compound, oil and grease. All surface imperfections, protrusions, structurally unsound and loose concrete must be removed and repaired with of SBR latex based polymer modified mortar. A schematic diagram of this coating system is shown in Fig. 1.



**Fig. 1:** Waterproofing system of pitched tile roofs

- |                          |                          |
|--------------------------|--------------------------|
| 1 Concrete Roof          | 2 Dr. Fixit Primer       |
| 3 (1 <sup>st</sup> Coat) | 4 Glass Fibre Mesh       |
| 5 (2 <sup>nd</sup> Coat) | 6 (3 <sup>rd</sup> Coat) |
| 7 Wooden Battens         | 8 Roof Tiles             |
| 9 Stainless Steel Screw  |                          |

#### 2.2 Priming

Apply a primer to a clean, smooth and dry surface by a brush or a roller. Allow the primer to dry prior to the application of coating. During the application of primer always maintain the surface in SSD (saturated surface dry) condition.

#### 2.3 Application

Apply 1st coat of heavy duty, fibre reinforced elastomeric acrylic waterproofing coating system and while it is still in wet condition, lay an 'open-woven' 2.5 x 2.5 mm glass fibre

mesh and allow it to soak completely. Immediately apply 2nd coat to embed the mesh in coating. Allow it to dry completely. Fix the wooden battens by drilling and using steel screws for fixing to avoid rusting. After drilling holes and before fixing the screws fix leak proof sealing tape on bottom as well as top side of the batten. This will ensure a perfect seal around the screwed area. The battens must have enough number of grooves depending upon the length of the roof, for efficient drainage of water in case there is breakage of tiles.

Apply 3rd coat all over the area covering the wooden batten. Carefully fix tiles on the batten. Take care so that rupture of the coating is avoided while fixing the tiles. Never fix the batten by hammering nails in concrete. It will damage the roof. Always use a drill machine to fix the screws.

### 3.0 For Profiled Metal Sheet Roofs

#### 3.1 Surface Preparation

Check to ensure that the metal roof is properly fitted with screws and fasteners. Replace all the vents on the roof; never leave anything on the roof that could cause a problem. Gaps if any between the sheets shall be filled using one part non-sag polyurethane PU sealant. Clean the surface well to remove dirt, dust, grease etc. Whenever flexible EPDM membrane is being installed it is highly recommended that the membrane shall be laid at the position and allowed to relax for at least 45 minutes. This will help releasing the tensions in the membrane. Install insulation boards over the entire roof; to attain a smooth surface to lay EPDM membrane roofing on metal roof.

#### 3.2 Installation

The insulation is fastened with epoxy coated screws and insulation fastening plates; the plates give more surface area to the screw head and securely fasten the insulation to the roof deck. EPDM membrane is secured with the same epoxy coated screws and smaller seam fastening plates. Each successive course of preformed membrane overlaps area about 150 mm where the fasteners hold the membrane in place. Hand held hot air welding machine is used to safely heat the membrane to bond all of the seams and flashings. The welds are as strong as the material itself and they require no adhesive or maintenance. The seam in the EPDM roof membrane is also welded. The membrane is fastened at the walls with the same seam plates and screws. It must be secured with screws and plates at any angle change or transition. The screws and plates at the wall are covered with another layer of membrane; this flashing covers the parapet dividing wall and waterproofs the perimeter of the roof. EPDM wall flashing is then welded to the roof deck membrane. One can get a service life of 15 years with this system of waterproofing.