

### **9.1.19 Roofing**

#### **9.1.19.1 General**

The work shall consist of supplying, laying and finishing complete insulation and roof coverings and shall include the provision of all necessary skirting, copings, flashings etc. On completion, all roofs shall be left sound and watertight and in neat and clean condition. All roof finishes shall be carefully worked or fitted around pipes and openings.

Roofing systems shall be in general the “inverted roof” or “protected membrane roof system” where the waterproof membrane is laid directly onto the structural slab and the insulating layer is then laid on the membrane and protected by a layer of files.

If heavy snowfall is expected at the project area, roofs shall be designed as timber or steel roofs and covered with aluminium trapezoidal sheet cladding or aluminium sandwich panel.

Any special working details prepared by the Contractor must be submitted to the Engineer for approval.

#### **9.1.19.2 Waterproofing and Insulation**

The structural slab or surface screed on it shall be primed before application of the membrane in accordance to the manufacturer's instructions. The insulation layer shall have a minimum density of 35 kg/m<sup>2</sup>.

The waterproofing system shall be of approved type and manufacture.

The waterproofing system shall be suitable for prevailing climatic conditions and shall be capable to withstand local weather conditions especially as regards to high temperature difference between day and night, high humidity and heavy rains. The waterproof membrane must have a mineral fibre surface.

#### **9.1.19.3 Filter Geotextile**

The material shall have resistance to Ultraviolet light, chemical attack and experience no significant change to its physical, chemical or engineering properties under the influence of sulphates, chlorides, acids and alkalis in the forms and concentrations in which they are present in soils and ground-water to be found in-place. The material shall have proven resistance against bacterial or other microbiological attack and shall perform according to its specifications at working temperatures between 5 and 45°C. Temporary exposure during construction to temperatures up to 60°C shall not permanently impair the material.

Filter fabric shall be supplied in rolls of at least 2m wide and shall unless specified otherwise be lapped in both directions at 0.3m wide. Roll lengths of the fabric shall be such as to lay complete in one operation without jointing, each of the various sloping and horizontal lengths.

The water permeability of the fabric shall be greater than that of the soil it is protecting while the mesh size shall be smaller than the sieve size passed by less than 10% of the soil particles. The weight of the fabric shall be at least 240g/m<sup>2</sup>.

#### **9.1.19.4 Water insulation membrane**

On inverted roof, water insulation shall be made by two layer of water insulation membranes. First layer shall be 3mm thick fibreglass retrofitted and second layer 3.3mm polyester rock wool retrofitted, one side mineral glazed.