

(5) Miscellaneous causes of dampness: There are various miscellaneous causes of dampness as mentioned below:

- (i) If the structure is located on a site which cannot be easily drained, dampness will enter the structure.
- (ii) The orientation of a building is also an important factor. The walls get less sunshine and heavy showers of rain are liable to become damp.
- (iii) The newly constructed walls remain damp for a short duration.
- (iv) Very flat slope of a roof may also lead to the penetration of rain water which is temporarily stored on the roof.
- (v) The dampness is also caused due to bad workmanship in construction as defective rain water pipe connections, defective joints in the roof, etc. connections of walls, etc.

Thus the important sources of dampness can be summarised as follows:

- (i) defective junctions between roof slab and parapet wall;
- (ii) defective roof covering of the pitched roofs;
- (iii) faulty eaves and valley gutters;
- (iv) improper rain water pipe connections;
- (v) inadequate roof slope;
- (vi) moisture from wet ground below foundation;
- (vii) splashing rain water;
- (viii) unprotected tops of walls, parapets and compound walls; etc.

15-2-2. EFFECTS OF DAMPNESS

The building materials such as bricks, timber, concrete, etc., have a moisture content which is not harmful under normal circumstances. The rise in moisture content of these materials beyond a certain level from where it becomes visible or visible causes deterioration, leads to the real dampness. In absolute terms, the moisture content of different materials may be the same. But the acceptable limit differs from material to material. For instance, the presence of 10 per cent by weight of water in timber is not harmful. But the same level could saturate a brick or cause deterioration of plaster.

The structure is badly affected by dampness. The prominent effects of dampness are as follows:

- (i) A damp building gives rise to breeding of mosquitoes and creates unhygienic conditions for those who occupy it.
- (ii) The metals used in the construction of the building are corroded.
- (iii) The unsightly patches are formed on the wall surfaces and ceilings.
- (iv) The decay of timber takes place rapidly due to dry-rot in a damp atmosphere.
- (v) The electrical fittings are deteriorated and it may lead to leakage of electricity and consequent danger of short circuiting.
- (vi) The materials used as floor coverings are seriously damaged.
- (vii) It promotes and accelerates the growth of termites.
- (viii) It results in softening and crumbling of the plaster.
- (ix) The materials used for wall decoration are damaged and it leads to efflorescence.

15-2-4) The continuous presence of moisture in the walls may cause efflorescence of wall is then reduced. The floorings get loosened because of reduction in the adhesion when moisture enters through the floor. The dampness combined with warmth and darkness breeds germs of dangerous diseases such as tuberculosis, rheumatism, etc. and the occupants may also become asthmatic.

15-2-3. REQUIREMENTS OF AN IDEAL MATERIAL FOR DAMP-PROOFING

Following are the requirements of an ideal material for the damp-proofing:

- (i) The material should be durable. As a matter of fact, the damp-proof course should remain effective during the useful life of the building.
- (ii) The material should be such that it remains steady and does not allow any movement in itself.
- (iii) The material should be perfectly impervious.
- (iv) The material should be capable of resisting safely the loads coming on it.
- (v) The material should be flexible so that it is capable of accommodating the structural movements without any fracture.
- (vi) The material should be dimensionally stable.
- (vii) The material should be reasonably cheap.
- (viii) The material should be such that it is possible to carry out leak-proof jointing work.
- (ix) The material should be free from deliquescent salts like sulphates, chlorides and nitrates.

15-2-4. MATERIALS USED FOR DAMP-PROOFING

Following are the materials which are commonly used for the damp-proofing:

- (1) Hot bitumen: This is a flexible material and is placed on the bedding of concrete or mortar. This material should be applied with a minimum thickness of 3 mm.
- (2) Mastic asphalt: This is a semi-rigid material and it forms an excellent impervious layer for damp-proofing. The good asphalt is a very durable and completely impervious material. It can withstand only very slight distortion. It is liable to squeeze out in very hot climates or under very heavy pressure. It should be laid by experienced men of the specialist firms.
- (3) Bituminous felts: This is a flexible material. It is easy to lay and is available in rolls of normal wall width. It is laid on a layer of cement mortar. An overlap of 100 mm is provided at the joints and full overlap is provided at all corners. The laps may be sealed with bitumen, if necessary. The bitumen felt can accommodate slight movements. But it is liable to squeeze out under heavy pressure and it offers little resistance to sliding. The material is available in rolls and it should be carefully handled, especially in cold weather.
- (4) Metal sheets: The sheets of lead, copper and aluminium can be used as the alternatives of damp-proofing. The lead is a flexible material. The thickness of lead sheets should be such that its weight is not less than 200 N/m². The thickness of copper and aluminium should be such that its weight is not less than 200 N/m².