

Damp-Proofing Barriers – Tanking

in association with Chemical Damp-proofing courses

What is Tanking?

“Tanking” in the normal civil engineering sense, is a process of preventing moisture ingress into a structure constructed partially or wholly underground, where water pressure exists. Such a “Tank” would be constructed of a membrane which is often enclosed within a brick skin to reduce the effects of the water pressure. The products usually used include asphalt, concrete, sheet metals, etc., depending on the water pressure and environment encountered.

This is a far more specialised subject than damp-proof barriers associated with damp coursing, and can extend to structures many meters below ground level including tunnels, etc.

Techniques applicable to construction of a new structure are not all applicable to existing buildings. This document is restricted to consideration of techniques applicable to existing structures.

A damp-proof course is designed to prevent moisture rising from the ground into the walls above ground level. In most instances properties are or have been constructed above ground level and the incorporation of a horizontal DPC will prevent transmission of moisture into walls. Occasions do arise, however, where for a variety of reasons the external ground level is above the internal floor level and in these instances a barrier against penetration of moisture must also be provided in conjunction with a horizontal DPC. The term often applied to these damp-proof barriers is “Tanking”.

For further details of treatments of existing buildings, see BWPDA Code of Practice: Remedial waterproofing of structures below ground.

Objective

The objective of the use of “Tanking” products is to provide a continuous damp-proof barrier from the completed chemical DPC down the face of the wall and in some instances across floors. Many of the product types listed below can be used, but it is important that compatibility especially with solvents present after injection, is taken into account.

Typical Uses

The most common use is in a situation where the DPC level being above the existing external ground level is also above internal floor level. This can arise from houses constructed on sloping sites, changes in path, pavement, or road levels, etc. Some of these may have arisen many years ago especially in some of our older towns. In these instances semi-basement situations can arise. The sloping site situation is very common and will involve the treatment of one wall and where an injected DPC is inserted an extra row of vertical injection at the extremes of the lateral treatment. Most material manufacturers produce detailed drawings to cater for every situation.

Types of Materials

The following list describes the main types of damp barriers that have been encountered and can be used in association with chemical damp-proof courses.

Manufacturers' literature should be obtained for full instructions on use and possible restrictions.

- (1) Asphalt – this is a hard material which is thermoplastic. Normally a wall is constructed to reduce the pressure and asphalt applied in a coat up to 25mm thick. A further wall is then constructed to prevent water pressure from delaminating the asphalt.
- (2) Upgraded Cementitious Coatings-these are essentially specially prepared cement: aggregate mixes containing chemical additives.
- (3) Resin Upgraded Cementitious Coatings-these are similar to (2) above but are 2 part coatings containing epoxy, polyurethane or other resins as one part and Portland Cement and curing agents as the second part.
- (4) Bituminous Coatings-these are usually emulsions containing Bitumen/Tar together with reinforcing materials e.g. S.B.R rubber. They are applied as a surface coating.
- (5) Resin/Tar Coatings-these are usually

epoxy or polyurethane resins extended with tar or bitumen compounds. They can be one or two pack and the subsequent cured film is able to withstand higher pressures than the products described in (4).

- (6) Sheet Membranes and cavity drain membranes can sometimes be used. It must be noted that these systems rely on the provision of adequate drainage to ensure water is managed out of the structure and away from wall and floor finishes.
- (7) Special Coatings-these are usually epoxy or urethane based two pack materials applied in one or two coats.

Precautions

It is important to ensure that “Tanking” and chemical injection damp-coursing works are integrated so as not to affect either treatment adversely. The adhesion of some surface applied coatings may be affected if “run down” from chemical injection has occurred, equally the placing of drill holes for injection should be in such a way as to avoid puncturing the “tanking” barrier.

During the design process the choice of fixings will have to be considered so that the barrier is not punctured by screws or nails. The area involved may be below ground level so extra ventilation may be required where solvent systems are used. By preventing the movement of moisture and the incorporation of a barrier there is the possibility that condensation could become a problem due to the relative coolness of the walls. In these instances extra ventilation will be required.

It is essential to ensure good surface preparation before applying liquid and cementitious coatings. Wall/Floor junctions and protrusions (pipeworks, etc.) also require special attention.

Conclusion

Many various forms of treatment exist for the prevention of moisture ingress in below ground level situations. Their suitability will depend upon the water pressure being exerted which is directly related to the depth below ground level and the water table. Providing the barrier is continuous

and subsequently not punctured treatments can be successfully carried out.

Further information

Building Research Establishment:

Digest 54: Damp - proofing solid floors.

Digest 245: Rising damp in walls: diagnosis and treatment.

BWPDA Code of Practice: Remedial Waterproofing of Structures below Ground

DP8/1107

The information contained in this leaflet is given in good faith and believed to be correct. However, it must be stressed that of necessity it is of a general nature.

The precise condition may alter in each individual case and the Association is therefore unable to accept responsibility for any loss howsoever arising from the use of the information contained herein.

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