Damp Proofing -
A Review of Good Practice
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Water penetration is a prime cause of deterioration in building structures and materials and the presence of excess moisture encourages the growth of moulds and wood rotting fungi. Because of this, building regulations require that buildings are so designed that water neither damages the fabric nor penetrates to the interior where it may constitute a health hazard as well as spoiling decorations. Source: BRE Digest 380

When considering moisture exclusion designers need to consider both the choice of DPC materials and the installation of damp proof courses in walls. Our published details show best practice in the use of our damp proofing products, based on long experience and compliance with published standards. We offer simple practical solutions which can be modified to suit a wide variety of design solutions provided the basic principles are retained.

More recently the BRE have produced the document ‘Thermal Insulation: Avoiding Risks’. This emphasises that the damp proof course or membrane is the critical interface between building elements in terms of energy efficient detailing as required under the revised Building Regulations. See also the Approved Document, Part L 1995 Edition, ‘Conservation of Fuel and Power’.

The earlier Approved Document C, (second impression 1992), sets out requirements for "Site Preparation and Resistance to Moisture" and also covers ground contaminants which can be countered by using Visqueen Building Products gas resistant (GR) products. The diagrams in section C4 highlight the need for a 50 mm cavity in all cavity walls apart from those with solid fill - a point which requires very careful consideration when detailing cavity trays and assessing the level of weather exposure.

However the key reference document for damp proofing above ground is BS 8215:1991 Design & Installation of Damp Proof Courses in Masonry Construction. Section 5 of this standard outlines the key damp proofing considerations that the designer should take into account. The following points are by no means a comprehensive summary of the contents of the standard (we strongly recommend that the standard is carefully studied) but are a precis of some valuable good practice guidelines contained in the BS.

Exposure Conditions
The designer should first determine the degree of exposure, the risk of penetration from any direction and the consequences of water penetration. The use of a UK exposure assesses the degree of severity of conditions that the building is likely to encounter and helps the designer to make the appropriate form of construction to meet these conditions.

Primary Protection
Provision should be made for weathered copings, sills, overhangs and projections, which will help to reduce the likelihood of moisture penetration into a building.

Integral System
DPCs should be designed in conjunction with membranes and flashings to form a complete system of protection impervious to moisture.

DPC Selection
The four principal considerations suggested for DPC selection are Durability, Resistance to Stress, Pliability and Compatibility.

Cavity Trays
The standard recommends that where there are changes of direction of a cavity tray, prefabricated units are used to avoid complex bending and folding on site. It states however that these prefabricated units should be sealed to the cavity tray.

DPC Location
The standard recommends that DPCs are located in every external wall immediately above ground level, beneath sills and copings, in parapet walls or pitched and flat roof abutments. This advice then ensures that the building is fully protected from moisture.

DPCs in Cavity Walling
BS 8215 emphasises that DPCs in cavity walls should be designed with particular care. Among the key points mentioned are:

- Assume that rainwater will run down the inner surface of the outer leaf, so DPC design should ensure that water is deflected away from the inner leaf and discharged through weepholes.
- To form effective barriers can give rise to complex three dimensional shapes and it is recommended by the standard that prefabricated units are used.
- Horizontal DPCs bridging the cavity should be stepped up by not less than 150mm from outer to inner leaf and should preferably be formed in one piece. Any necessary joints should be fully supported, lapped and sealed.
- Discontinuous cavity trays must be fitted with sealed stop-ends.
- Vertical DPCs should be located at jambs and lap over the sill DPC.

Other Standards
BS 8215 is by no means the only standard that refers to damp proofing. We include a more comprehensive reading list at the end of this section. This includes British Standard 8102 (Protection against water from the ground) and British Standard 5628 (part 3, section 3) which has information on Movement Joints (20) and Exclusion of Moisture (21). Some useful diagrams indicating the need for stop ends to lintels and weepholes are included.

The diagrams of internal and external tanking in BS 8102 demonstrate the principles clearly, but not the detail of installation. Zedex basement details are intended to assist designer and installer to produce a practical and effective solution.

Housing
Housing specialists will know that the NHBC technical standards are essential reading. In particular, we support the view that dpc’s are required over all lintels. Keeping the waterproof membrane independent of the structure is an effective ‘second line of defence’ and enables a more effective stop-end solution.
Exposure Zones
Approximate Wind
Driven Rain
(Litres/m² per spell)

- Less than 33
- 33 to less than 56.5
- 56.5 to less than 100
- 100 of more

Summary
Continuity is the key to successful damp proofing and perhaps this point is not sufficiently emphasised in published standards.
Compatibility of adjacent products is equally significant. Mastic / dpc adhesion, solvent based stains / dpc reaction for example.
Successful damp proofing depends on a combination of good design, correct installation and a quality product.
At the interface of so many materials, considerable technical knowledge is required to ensure long term effectiveness, not simply short term compliance.
Visqueen Building Products can provide high quality compatible products and a high level of technical advice. As winners of an 'Investors in People' award, we aim to work in partnership with you to achieve the best possible solution. We are also committed to 'continuing' Professional Development (CPD) and are pleased to offer 'tailor made' short seminar’s for your organisation, on request.

Useful References
British Standards
BS 743 1970 Materials for DPCs
BS 5642 Cills and Copings Part 1: Specification for window cills of stone and concrete
BS 5930 1981 Code of Practice for Site Investigations
BS 6515 1984 Specification for polyethylene DPC for use with masonry.
BS 8007 Code of Practice for concrete structures for retaining aqueous liquids

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Further product and technical information is available from Visqueen Building Products web site. The site includes downloadable technical data sheets and typical installation details.