



**CLIVE THOROGOOD
BUILDING SURVEYING LIMITED**

Technical Note 3: RISING DAMP

Background

Your surveyor may identify a risk of rising damp, so I thought that a little background would be helpful.

Buildings are affected by damp in many ways. This can literally come from all directions; down through defective roof elements, inwards via penetrations in the external fabric of the building, leaking services and also up from the ground, due to capillary action of moisture soaking through brickwork.

Dampness can (and more frequently does) come from the internal use of the building and poor management of moisture produced from kitchen/bathrooms etc, but this is covered under a separate Technical Note.

All (except very old) buildings have measures in place to stop rising damp, often through a combination of a damp proof membrane (DPM) installed into the ground-bearing floor structure, as well as a damp proof course (DPC) installed into the external and internal walls. This acts as a physical horizontal moisture barrier and is typically placed approximately 150mm (or the height of 2 brick courses) above the ground. The floor damp proof membrane is lapped into this level to provide a fully watertight barrier against ground moisture rising upwards. This is all a legal requirement under the Building Regulations now and has been for some time.

However, there are a number of reasons why this system can fail.

1) The damp proof course itself can fail. Older properties were provided with a slate DPC; this typically consisted of 2 layers of roofing slates laid overlapped. This works well up to a point where the building itself moves over time (which they all do to some degree), but the slate is brittle and can crack, or snap. This creates a pathway for ground moisture to rise upwards, by-passing the DPC and moving up through the wall. This can occur to a height of a metre or so.

Later buildings were provided with layers of bitumen felt as a DPC and this works well until the felt ages over time, dries and also breaks down. The same issue occurs as for slate i.e. the barrier protection is lost.

2) Adjacent ground may have been banked-up alongside the building such that the DPC has been 'bridged' by damp soil, so ground moisture just soaks into the wall above the height

of the DPC. This is common in gardens and often goes unnoticed. This is rectified simply by pulling the damp soil away from the elevation and the problem should address itself.

3) Water can splash off of adjacent ground e.g. patio slabs and land over the height of the DPC. This can often be due to leaking rainwater gutters above and can be resolved just by ensuring that these are watertight. If the problem remains, then the slabs closest to the building can be lifted, or cut back, so as to leave a circa 200mm-wide space around the edge of the slabs. This space can be filled with shingle and this should prevent further splashing.

4) Water can rise upwards due to capillary action if there are fine cracks in e.g. external render, which may also have been carried down too low. Ground moisture can soak up the inside of this render and 'bridge' the DPC. Such render should be stopped just above DPC height and finished with a drip bead along its bottom edge. This way, rising damp has nowhere to go once it reaches the bottom edge of the render.

Why is it a Problem?

Timbers in buildings are prone to attack from fungal infestation, such as wet and dry rot. There are many species of fungus, which live by digesting cellulose in timber and these survive (and thrive) under certain environmental conditions. Normal 'ambient' moisture levels do not allow fungal spores to become established and then grow. Fungal spores may be sitting there dormant, but the problems start when the structure of the building, which may be in close contact with timbers, becomes wetter than 'ambient' and enters the moisture zone whereby fungal spores can germinate and thrive.

Where timber ground floor joists, for example, may be embedded into external walls, these are normally protected by being placed at a higher level just above the DPC line. Clearly, if the DPC fails for any of the above reasons, then the ends of the joists can become wetted and, thus, become prone to fungal infestation. This is why your surveyor should always check around the ground floor walls with a damp meter to check whether any such rising damp is likely to be occurring and that the DPC height has the required ground clearance.

Fungal infestation under timber floors can spread fast, go unnoticed and cause significant structural damage as the fungal hyphae continues to eat into the timber across a wider area. The fungi produce a fruiting body, which produces many more spores, which land on damp timber and the process can just develop exponentially. This is why un-tanked basements, with moisture penetrating through the damp side walls, are especially prone to attack in this way.

If you have a solid ground floor concrete slab, then this is less of an issue, but rising damp can still affect other timbers, such as skirtings, wall panelling and door architraves.

Another problem is the issue of hygroscopic salts. These are organic salts, dissolved naturally in the ground moisture and brought up with the rising damp and deposited on internal wall plaster. These salts can continue to attract moisture from the air, even when the pathway for the rising damp has been closed off i.e. the rising damp issue has been resolved. Such hygroscopic salts cannot be removed from the plaster and the only solution is to remove the affected plaster and re-plaster. This is obviously very disruptive, requiring removal of plaster internally to a height of approximately 1 metre above the floor, including associated skirtings, panelling etc. Any plumbing or electrical services will also need to be temporarily removed

and reinstated. Electricians must be checked for safety if they have been in contact with damp surfaces for any length of time.

Remedies

The most obvious solution against any form of damp is to stem the source of the moisture and return the environmental conditions back to more 'normal' levels, which are outside the zone whereby the fungi can germinate and survive. This can be as straight-forward as e.g. dragging the damp soil away from the building, preventing the splashing by fixing the leaking gutter, or adjusting the height of external render, all as discussed above.

Where the problem has become more developed, or the above is not practical, then other solutions may be available: -

If the original DPC has broken down and is now allowing water to rise up through it, then it needs to either be replaced or enhanced.

Replacement is the longer-term solution and involves physical removal and replacement with a modern plastic DPC, usually in the same line in the wall. If the levels require, or allow, then it can be inserted in another line of brickwork, but the lapping of the DPC into the damp proof membrane needs to be retained.

Chemical injection of a water-repellent coating can be achieved through a series of 10-15mm diameter holes drilled into the wall. This coats the surfaces of the masonry within the wall and reverses the 'capillary' action of water being drawn upwards. This is less-disruptive than the DPC replacement, but is not always successful and may still require replacement of internal plaster due to the hygroscopic salts issue.

Any underfloor ventilation needs to be maintained; therefore, airbricks in the external walls must be kept clear, so as to allow for a decent cross-flow of air under the floor. This helps to keep the underfloor area at relatively low moisture levels. The issue here is that any extensions to a property (e.g. a back extension), which may be built with a modern, insulated concrete slab, all too-often ignore this need and will block off the original air bricks along a rear elevation, so this cross-flow principal is lost. Ducts should be included in the new slab to help to retain some of this ventilation, but they frequently are not.

These are the common issues, causes and solutions; however, there will be many more and damp can materialise for any one of many reasons – often interlinked and needing multiple solutions. The important consideration is not to ignore the problem, but strike it as soon as you discover it. If the conditions are suitable, fungal infestation can become rampant and become disproportionality disruptive and expensive to resolve compared to what might have been a simple and cheap solution.

Always seek professional Building Surveyor advice for a complete assessment.