

Damp in listed buildings

SIMON HAY – TECHNICAL DIRECTOR, DIALES TECHNICAL TEAM IDENTIFIES AND ADDRESSES THE RELEVANT CAUSES AND SOLUTIONS FOR DAMP IN BOTH MODERN AND HISTORICAL BUILDINGS.

The conservation approach to historic buildings is to undertake minimal intervention. This does not always suit modern comfort requirements. Damp buildings are a danger to the health of the inhabitants and a threat to building fabric. This is a particular concern for listed buildings.

Humans prefer to live in a relative humidity (RH) range from 30 per cent up to 60 per cent. We use perspiration when we are too hot to cool our bodies. However, perspiration is more effective in lower RH conditions. We perceive the lower rate of evaporation of our perspiration, in higher RH conditions, as uncomfortable or even distressing.

In a damp building our health is adversely affected. Given the UK's stock of older buildings and damp climate, unacceptably high levels of dampness and humidity are unfortunately common. The UK suffers from extremely high levels of childhood asthma and other illnesses associated with the bacteria and spores that thrive in areas of high humidity.

Our listed and historic buildings are also damaged and destroyed by damp. We heat our buildings to a higher temperature than in previous times. Additionally, ventilation by ill-fitting doors, windows and open fires is reduced in the modern era. When the temperature is low and the relative humidity is high, evaporation of water is slow. When relative humidity approaches 100 per cent, condensation can occur on surfaces. This may lead to problems with mould, corrosion, decay, and other moisture-related deterioration. Condensation can be more common than rising damp, and is a particular threat to structural timber and doors and windows.

Damp is not only unsightly and responsible for poor health, it also destroys build-



ings leading to rot. This occurs in both the obvious materials, such as timber, fabrics, and plaster but also less obviously in accelerated decay of mortar and even stone and bricks. If a stone or clay product is saturated by water in the UK's variable climate, repeated freeze thaw actions may make the face of the block or brick spall off, exposing the less dense and sturdy internal structure. Therefore, damp damages both our health and that of our historic buildings. While we cannot control the climate humidity, we can mitigate many of the harmful effects of damp and condensation.

There is a school of thought, in conservation circles, that non-intervention is the best policy. As both our health and the building fabric of our historic buildings can be damaged or destroyed, we do not believe this is the best course of action. There are a range of non-major intervention techniques which will benefit both the building and the inhabitants, these should be known to a competent professional.

The Building Regulations Approved Document C site preparation and resistance to contaminants and moisture; notes the following, under Section 5: Walls.

"5.2 walls should;

a. Resist the passage of moisture from

the ground to the inside of the building

b. not be damaged by moisture from the ground and not carry moisture from the ground to any part which would be damaged by it....

5.4 Any internal or external wall will meet the requirement if a damp proof course is provided."

To rectify damp in a listed building the following works might be considered:

- Inject a new chemical damp proof course.
- Preparation work of bush hammering the wall to provide key.
- Waterproof tanking to a party wall, full height.
- Specialist full height rendering.

This may rectify damp issues but may not be the most suitable solution, as this is not the most sensitive approach.

For a listed building, bush hammering brick walls to prepare the walls for waterproofing depends on the view of the local conservation officer. If the conservation officer objects, grit blasting may be permitted. Chemical injection to listed buildings is normally permitted, as drilling takes place through mortar joints not the masonry units.

If the property has a party wall (a shared wall with the adjoining property), the listed building owner will have to appoint a party wall surveyor to gain agreement with his neighbour to carry out installing a damp-proof course (DPC) and waterproofing of the wall. These actions may force damp to the neighbour's side of the wall causing damage. There is a possibility that damp by being eliminated from one property may affect the neighbour's party wall. The Society for Protection of Ancient Buildings (SPAB) may recommend the installation of an injected damp-proof course if the DPC has British Board of Agrément (BBA) accreditation.

An alternative and preferred treatment for a shared party wall might be a non-permeable, waterproofing under layer of a plastic membrane as part of a proprietary system followed by two coats of lime plaster. This should satisfy both the conservation officer, avoid having to serve a party wall notice, and ensure that the historic fabric is maintained. This alternative process would be more in keeping with a conservation philosophy of minimum intervention. Most importantly, damp which damages both interior finishes and the health of the inhabitants is both contained and the building can be both dry

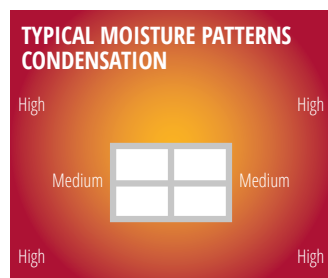
and also use traditional finishes.

One approach would be to accept that the property is damp but, with heating and occupation, the property will stabilise in use. In this way natural damp is accepted and becomes part of the property. This may be acceptable for the building, but really cannot be acceptable for the health of the inhabitants and may indeed provide fertile conditions for the growth of wet rot with its ensuing issues. Chemical analysis can detect the presence of harmful nitrate and chloride in wallpaper and plaster, which may provide a permanent unacceptable environment.

Absence of a DPC to the ground floor is often normal in historic properties. This leads to rising damp by capillary action drawing salts into and up the wall. Once the plaster is impregnated with the salts, which are part of the damp issue, the plaster becomes hygroscopic. This hygro-

scopic plaster will permanently attract moisture and therefore remain damp. The only solution is to strip the plaster and re-plaster in the appropriate material. If this is traditional lime plaster, even with decoration, this is the preferred solution. If only a part plaster strip and re-plaster up to 1000mm is undertaken, it is common that a salt line on the junction will be a continuing mar to the finishes. An injected DPC and a re-plaster will be the normal solution.

Condensation has become more common as we heat our houses to higher



Hygroscopic plaster will permanently attract moisture and therefore remain damp.

temperatures. The key tool for investigation is the skilled use of the protimeter which gives a good indication of damp distribution.

If a membrane can be installed over the existing building fabric it gives protection from damp and also improves the thermal performance of the wall. This lessens the possibility of condensation damage. In one case that I was recently involved in, the dispute centred on the cost of the fitted joinery and finished items which

were disproportionately much greater than the initial works would have been. This occurred as they were installed over hygroscopic plaster, which subsequently had to be removed, and the finished joinery and decoration had to be reinstalled.

The true cause of dampness is often difficult to diagnose. There are those who are keen to cure 'rising damp', whether or not this is the actual issue. Normally the householder, particularly of a historic property, can help the specialist advisor by knowing the true condition of the house in the varying seasons of the year.

Damp is a threat to both listed buildings and to the people living in the property. It can be caused by leaks, rising damp and condensation. Historic buildings require careful protection and conservation; appropriate solutions should ensure the building is not damaged and that the historic integrity is preserved. ■

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