

A Practical Guide to

TRADITIONAL BUILDINGS MAINTENANCE

Part 1

Over the next few issues we will be running a series of information sheets about buildings maintenance. Starting with dampness this series of articles will include; Rebuilding a Stone Wall, Cob Buildings, Rendering, Pointing, Plastering and Limewashing.



Introduction

Prior to the 20th century building techniques were very different to those practised today. Traditional buildings benefit in a number of ways from using lime putty based renders and plasters:

- their porosity allows the structure to breathe
- their elasticity helps accommodate general movement
- their self-healing nature reduces cracking problems
- stone masonry pointed with lime mortar allows moisture to evaporate from the joints rather than penetrate the masonry
- a limewash finish aids evaporation of moisture from a render

On the other hand the cement-rich repairs used by many general builders are often very damaging to the structure resulting in:

- a tendency to crack rather than absorb movement
- water entering the structure via cracks and then being trapped, creating damp conditions

- a tendency for renders to separate from the wall, increasing dampness
- cob walls can progressively deform and can fail

These problems are often compounded by the use of modern acrylic paints which trap moisture in the walls.

Practical Considerations

When specifying a lime mortar, consider:

- its purpose - bedding, pointing, rendering, plastering - and their different requirements
- the nature of the substrate - its strength, durability, porosity, water vapour permeability
- the environmental conditions to which substrate and mortar are exposed
- the need to match existing mortars
- the cost may also have a bearing on the approach chosen

Pure limes only set by carbonation where the lime (calcium hydroxide) reacts



with carbon dioxide from the air to form calcium carbonates. Mortars and plasters based on pure limes are suitable for internal work or sheltered conditions where hydraulicity and frost resistance are not necessary. They offer maximum breathability and their lower compressive strengths can be an advantage in accommodating stress and movement.

From the times of the Romans, lime mortars for building or external rendering had added ingredients to increase their compressive strength, improve frost resistance and allow them to set under water. The latter lime mortars are called hydraulic for this ability to set under or in the presence of water. The degree of hydraulicity of the mortar will affect many of its characteristics e.g. compressive strength, speed of set in the presence of water, water vapour permeability.

Please note that your circumstances may dictate that variations on the example specifications may be required. Please contact Mike Wye & Associates friendly team to discuss your individual situation.

Dampness in Older Buildings

It is necessary to work out where dampness is coming from before making any final decisions on a course of action. Issues such as water table level, soil drainage, exterior/interior ground levels, inappropriate external renders, acrylic masonry paints, inappropriate pointing mortars, porous substrates (e.g. brick and some stone types) rainwater goods such as guttering, dew point/humidity in the rooms, poor air circulation and ventilation, damp proofing membranes, floor coverings etc. all play a part, together with exposure to the weather, construction materials etc.

Moisture in old buildings goes with the territory to some respect but its still important to know whether it's 1. penetrating rain 2. rising moisture 3. condensation on cold surfaces or a combination of all 3.

If you have penetrating dampness then you may have to consider whether the stone or brick has become excessively porous or any pointing or external render is failing or inappropriate. Walls may be relatively thin so extra protection might be needed outside in the form of render/slate hanging etc. Lime mortars used for pointing and rendering are more porous than a cement render, although this depends on the proportions of sand to binder, but this can be a mixed blessing on a permanently saturated westerly wall. Limewashes would be used to help resist penetrating rain and were often mixed with oils, tallow or other ingredients to reduce water penetration. Small quantities of linseed oil can be added into the backing coats of lime render or into a mortar for pointing. So if penetrating rain is the problem the right



mix of lime mortar/limewash is needed otherwise there's no improvement other than that a lime render will crack less and will breathe more if you get warm dry sunny days!

If there is rising dampness, this is usually caused by a high water table/high external ground level/porous substrate e.g. brick/some stones/earth. In many types of stone wall damp proof injection can be a total waste of time and money as you can't get a continuous barrier in a bedding mortar. The worst case scenario is 90% success where any rising dampness is then concentrated into the 10% failure. Where it does work it can concentrate any rising dampness in vulnerable areas such as timber joists, window seats, sills or occasionally electric sockets.

Most damp proofers insist on removing internal plaster to a height of 1 - 1.5m and putting on a cementitious waterproofing plaster system to mask whether the injection actually works. In time you can get a tide mark as the tanking drives moisture ever higher - above the tanked level - causing structural damage to any timber fixings e.g. joists, window seats, sole plates in partition walls, studs

for plaster lath etc. If you have condensation this can be caused by a number of factors, modern dense plasters, damp wall through penetrating or rising dampness. Soluble salts deposited on wall etc. and water vapour in the room then condenses on a colder surface. This can be a vicious spiral down as the condensation gets absorbed, lowers the wall temperature and so on. Ideally you need to know the moisture content at the centre of the wall - surface meter readings can be totally misleading as salts deposited on an inner surface will carry electric current even if the wall itself is relatively dry. A lime plaster is useful as it is more porous than a modern gypsum plaster and reduces condensation problems. Typically a coarse haired mix 3/1 sand/lime putty for the backing coats and a 2/1 fine sand/lime putty mix for the finishing coat. It can then be painted with a limewash or alternative breathable paint. All these products we make or supply and specification sheets are on the website for internal plastering, external rendering, limewashing etc.

There are additives for lime plasters to help them set in damp conditions. These are

called pozzolans, and are types of burnt clay. Clay plasters only set by evaporation of the moisture in the plaster so may not be suitable if you have an area of permanent dampness. Its best to look for and take action with the easiest and cheapest solutions first. If the problem is serious enough it may be necessary to consider having moisture readings taken in the centre of the wall but this can be a disruptive and expensive option. We run practical courses in using traditional lime and clay materials and we try and cover all aspects of maintaining and repairing older properties.

Mike Wye & Associates
*Natural Building
 & Decorating Products*
www.mikewye.co.uk

Tel: 01409-281644
 Fax 01409-281669

*Buckland Filleigh Sawmills
 Buckland Filleigh
 Beaworthy
 Devon EX21 5RN*



*From Listed Heritage,
 the specialist magazine for the
 Listed Property Owners Club
 E-mail: info@lpoc.co.uk
 Tel: 01795 844939*

