Renders and Plasters - A guide on works to plasters and renders on listed and other traditional buildings.

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[1st Edition]

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Introduction

Render/plaster is a coating material applied over the top of a building's structural fabric. The term render is commonly used for external finishes, with plaster used for internal ones, but other distinctions between the two terms also exist. External render protects the fabric from rain, wind and frost damage. Both have the added advantage of draught-proofing the building and they provide a clean and smooth finish easy for decorating.

Render/plaster, particularly if it is historic or characteristic to an area or building type, forms part of the character of a listed building or non-designated heritage asset. Historic render/plaster will often have an attractive appearance, show the building's traditional form and reflect local building materials and crafts. Its detail can also say a lot about the type of building. For example, decorative plasterwork probably reflects high status or a wealthy owner, whereas a smooth, plain plaster may suggest a simpler and more functional character.

What is render/plaster made of?

The two most common historic types are:

- Lime render/plaster – made from
  - lime - a calcium-based mineral
  - sand or chalk
  - hair or other fibres
  - sometimes additional minerals that alter its relative performance, called pozzolans.

- Clay daub – Made from clay minerals, often combined with straw and other minerals again.

These materials are absorbent and porous and allow a building to 'breathe'. They also flex with the building.

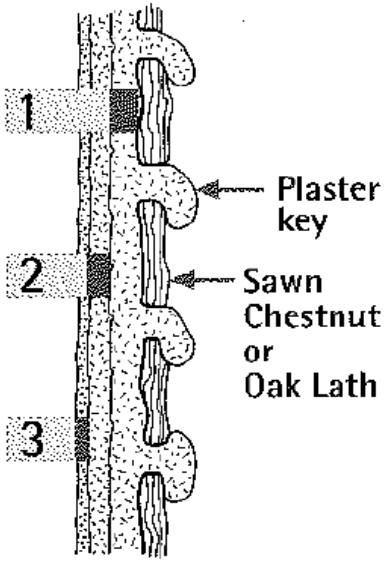
In the 20th century, cement and gypsum became more prevalent for renders and plasters, and many pre-existing buildings were re-rendered/plastered using these materials. However, these materials are impermeable and rigid. As most pre-1919 buildings were constructed to allow moisture to enter the fabric and evaporate, and the nature of the materials mean that to some extent they move, these are therefore not suitable materials for these buildings.

A timber framed wall is likely to be badly affected by damp if an impervious hard cement render is applied to either the interior or exterior. Once a timber framed, clay lump or soft brick

building has been encased in a hard cement render the best course of action is often to remove it all and re-render with a soft lime or clay plaster.

What is render/plaster fixed to?

For timber framed buildings, render and plaster was traditionally applied to timber laths, which are fixed between the frame members. These were traditionally split or riven oak, However, oak is no longer recommended as it can result in shrinkage issues and produce an acid that reacts with lime. More recently, sawn lath, of either chestnut or softwood, have become more common.



1. **Backing or scratch coat** approximately 10mm thick. Lime putty : sharp sand 1:3 with the addition of about 1/2 kg of hair per barrow load of mix.

2. **Floating coat** approximately 6mm thick. Lime putty : sharp sand 1:3 plus 1/2kg of hair.

3. **Setting or finish coat** Lime putty : soft sand 1:2 for a smooth interior finish.

In contrast, cement and gypsum plasters are often applied to expanded stainless steel mesh, also known as expanded metal lath (EML). This is poorly compatible with traditional lime and clay renders/plasters. Gypsum is also applied to boards, forming plasterboard. Render can also be applied to modern wood fibre board.

For clay lump and masonry buildings, the render/plaster was often applied directly to the structural material. In the case of clay lump buildings, a mix of clay and water, called a clay slip, was also sometimes used.

How to I determine what my render/plaster is?

The following are some typical identifying features, but may not be conclusive on their own:

- Lime/clay renders/plasters typically have a more irregular/uneven profile then cement/gypsum.

- Visible signs of damp and cracking are often indicative of a cement render that has trapped moisture or failed to flex with the building.

- Detach a small bit of the render/plaster and look for distinct lumps of chalk or hair, suggesting lime, or straw, suggesting clay.

- It will normally be much easier to crumble a small bit of a lime or clay render/plaster in your hand compared to cement.

- If the backing is visible, then the type of backing will usually indicate the render/plaster type, as above.

- Apply a small amount of vinegar to a sample and if it fizzes then it is likely lime-based.

- Previous Listed Building Consent applications may detail recent render/plaster replacements.

- Plastering companies can often undertake chemical analysis of a sample to determine its exact mix.

Do I need Listed Building Consent for works to my render/plaster?

To some extent, this would depend upon the relative historic interest of the current render/plaster. However, as a general guide:

- Small patch repairs using matching materials and methods would not normally require Listed Building Consent. If the existing material is of no historic interest, then the Heritage Team would normally allow replacement of up to approximately 50% of an elevation

without requiring Consent. However, this will likely be lower if the render/plaster is of historic interest.

- Patch repairs but using different materials, which would include for example changing the type of aggregate, or the ratios within the mix, would generally require Listed Building Consent.

- Replacement of entire walls/elevations of render/plaster, whether with a matching or non-matching material/mix, would normally require Listed Building Consent. This may not be required if the wall/elevation in question is part of a modern extension of no historic interest.

- Changing the finish of the render/plaster, such as changing from a pebbledashed to smooth finish, or vice versa, or adding or removing pargetting, would normally require Listed Building Consent, including on external walls of a modern extension.

- Adding a render/plaster finish where it does not currently exist, or permanently removing a render/plaster finish, leaving the underlying fabric exposed, will normally require Listed Building Consent.

Seeking Advice

It is advised to consult the Heritage and/or Development Management (Planning) Departments to determine if Listed Building Consent and/or Planning Permission are needed to address such issues, at:

- heritage@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3
- planning@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3

For more specific guidance on the acceptability of works requiring any form of permission, formal pre-application advice can be sought - for more information please see https://www.babergh.gov.uk/planning/pre-application-advice/ or https://www.midsuffolk.gov.uk/pre-application-advice.

What detail should an application include?

As well as the standard Validation requirements for all applications, a Listed Building Consent application for render/plaster works should include the following:

- Clear detail on the nature, location, extent and significance of the finishes to be removed/added. Photographs are always recommended as part of this. The significance of the finishes should be considered as part of a Heritage Statement.

- Clear and convincing justification for the principle and details of the alteration.

- It is generally recommended to conduct a few small trial holes through the render/plaster, up to approximately 30cm squared, to give an indication as to what may lie below, and provide photographs of this in an application.

It is often best not to remove render/plaster from multiple walls at once, as the render could be performing a structural function if the fabric behind is damaged.

It can be best *not* to be overly prescriptive upfront in regard to details such as render/plaster mix and render backing, particularly if a change from the existing is proposed/required. The removal of the current render/plaster may reveal information that would guide/restrict what would be

considered appropriate, and as such agreement to these details will often be left to condition stage, once the render/plaster has been removed.

The works may reveal underlying layers of historic render/plaster finishes, which may require further assessment before their removal may be agreed. The removal of the render/plaster may also uncover the need for works to the underlying fabric. Conditions would also likely be imposed on any approval to allow for further agreement to relevant works in these regards at a later stage.

My render/plaster needs replacing. What should I replace it with?

The following is a general guide, and will not apply to all cases:

- If the existing render/plaster is of historic interest, but needs replacing, or is a modern replica of a traditional mix, then normally it will be a requirement to match it, down to the constituent parts and ratios, and the render backing.

- If the existing render/plaster is cement/gypsum on mesh, then the Heritage Team will often require this to be replaced with a more traditional render/plaster, on a more traditional backing. Where evidence of previous historic mixes survives, then the new render/plaster may be restricted to matching this.

- Where there is no existing lime render/plaster mix to follow, or the existing is not considered a suitable one to replicate, the new mix should still broadly align with the following, unless otherwise justified:
    - Use chalk and/or sharp sand as the aggregate for lime, or straw or other appropriate material for clay.
    - Contain no cement or gypsum.
    - For lime specifically:
        - Have a ratio of between 1:1½ to 1:3 of lime to sand or chalk.
        - Be a non-hydraulic or, particularly in more exposed areas, a weekly hydraulic (e.g. NHL 2) lime. Anything stronger may be more akin to cement.

Can I permanently remove render/plaster or add it where it does not currently exist?

Permanent removal of renders/plasters and adding renders/plasters where they do not current exist, are both unlikely to be supported, unless clear evidence is provided demonstrating that the current situation does not reflect the historic one and therefore the works would better reinstate the historic character of the building. In addition, in the case of permanent removal of render/plaster, the subsequent application of a render/plaster on a previously exposed surface

may have overly damaged the surface of the underlying material, such that it would now be unsightly to leave exposed.

Many originally rendered/plastered timber frames were exposed externally and/or internally in the late 19th Century and 20th Century. Where there is evidence for this, re-rendering/re-plastering these areas will normally be considered appropriate in principle.

Can I introduce wall insulation as part of the works?

The Heritage Team are aware that wood fibre boards can provide a cheaper render backing alternative to timber laths, and also have some thermal benefit. However, cost is not generally considered a suitable justification for not using a traditional technique. Where timber laths survive, the loss of this technique is unlikely to be supported. However, even where no timber laths currently survive, where there is evidence that they were used historically, the Heritage Team generally consider that timber laths should still be reinstated.

Consideration will often be given to works to improve the thermal efficiency of a listed building but having regard to a balanced approach. It is possible to use external insulation board with laths over the top. The additional cost of using both is again rarely considered suitable justification for not doing so. The use of insulation board may increase the thickness of the wall build-up, and to a greater extent when laths are used as

well, and this could result in unsympathetic junctions, such as with roofs and plinths. In such circumstances, consideration to just using insulation board may be given, but it should first be adequately demonstrated that a negative impact to the significance of the building would/would not occur, typically through measured section drawings.

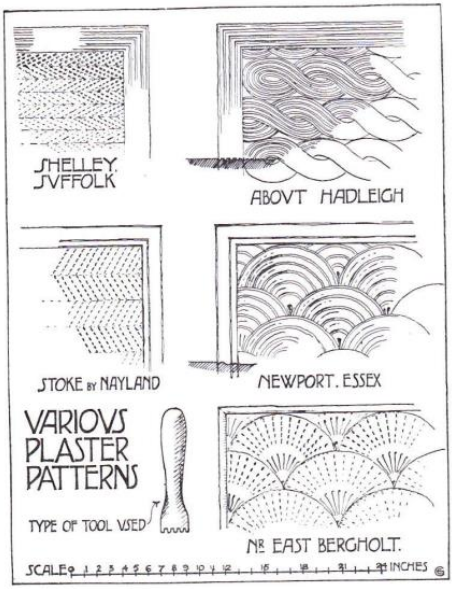
Re-rendering/replastering may also give opportunities for the use of insulative renders and, in the case of timber frames, insulation between frame members, which may offset the need for as much external wall insulation as well.

Each case for wall insulation as part of a rendering/plastering proposal would be considered on its specific merits and factors, some of which are only likely to become known once the current render/plaster has been removed.

Pargetting and other decorative plasterwork

Most renders and plasters are finished smooth. However, sometimes decorative work was conducted to the render/plaster, particularly if the owner had the funds to afford it. These usually have to be applied shortly after the render/plaster is applied, before it sets. The common types are:

Pargetting



This is a particular and important historic characteristic of East Anglia, and typically consists of geometric patterns, such as chevrons and fans, often set within square or rectangular frames. Other, less common, designs include coats of arms and images or dates set within ovals. In Babergh and Mid Suffolk it was particularly common from the late 17th to early 19th Centuries, though both earlier and later examples exist. Historic examples of more elaborate and unique designs are rare in these districts; where such designs are found they are more likely to be modern creations. Pargetting was traditionally made using specific hand tools.

Ashlar Scribing

This is similar to pargetting, but the render/plaster is marked as if to resemble stone blocks/other stonework. This was more popular in the 18th and 19th Centuries.

Pebbledash and Roughcast

Stones are mixed into the render to create a textured appearance. This commonly dates to the late 19th Century onwards and as such is more commonly found in cement render.

Where pargetting or another form of decorative plasterwork, such as ashlar scribing or pebbledashing/roughcasting exists, and is considered to add to the historic interest of the building, then ideally it would be retained. Where there is sufficient justification to prove retention is not possible, the decorative plasterwork should be accurately replicated in the replacement render/plaster and only in the areas where it currently exists.

The Heritage Team may request that a sample panel of decorated render is created and approved in advance of applying it wholesale, to ensure a faithful replica. Even where the pattern is in modern cement/gypsum, it may reflect a continuation of earlier patterns on the building, and thus recreation may still be required. It is also possible that underlying historic finishes may exist that retain evidence of pargetting or other decorations. In those cases, it may also be required to reinstate this pattern on any new render/plaster applied instead or over the top.

Introducing new pargetting or other decorative plasterwork where it does not currently exist is only likely to be supported where there is clear evidence that the proposal would be

accurately reinstating a historic design lost from the same location, and where this is therefore considered to overall enhance the significance of the building.

Where existing decoration is not considered of historic interest and/or is considered inauthentic, then it may be required that this is not reinstated, and instead the render/plaster is left with a smooth finish.

Appropriate Render/Plaster Mixes

Historically, most render/plaster mixes were likely made on site, but today than can be bought bagged. These are then mixed with further water on site to make ready for use. The Heritage Team do not require render/plaster to be made on site. However, companies of ready-made products do not always provide exact details of their mixes. As such, their acceptability has been assessed from studies of their use in practice.

Lime

Constituent Parts

The basic ingredients for lime plasters and renders, and also mortars, are lime putty, sand/chalk, hair and sometimes pozzolanic agents.

- Lime – A calcium-containing mineral, acquired by burning chalk, marble or limestone, resulting in a

crushed or powdered form (quicklime). This is then mixed with water, creating an exothermic reaction that slakes the lime and forms lime putty.

- Aggregate – Typically Sand or chalk – Sharp sand is used for backing and float coats. A very coarse sharp sand can be mixed 50/50 with soft sand to produce a more workable grade. Soft sand is sometimes used for a smoother internal finishing coat. Alternatively unburnt lumps of chalk may be used. There is some evidence to suggest that chalk was more common than sand historically.

- Fibres – Usually Animal Hair – can be of almost any sort. Wool or chopped straw can also be used.

- Pozzolanic Additives – These are added to lime plasters or renders to promote the set. Pozzolanics are useful in particularly damp conditions, where there is a risk of unseasonable frost, or if urgent repair work is carried out during winter months. There is growing historical evidence that pozzolanic additives were used for all external work. The most commonly used pozzolanics are crushed limestone, brick dust and fired clay. Some pozzolans improve the thermal performance of the render. Depending upon the original stone, the lime may already contain other minerals that would act as natural pozzolans.

Ratios

As lime has become more popular again during the last 40 years, the ratio of 1 part lime to 3 parts aggregate has generally been taken as the common ratio, based upon old guidebooks. However, more recently, evidence has highlighted that these ratios were in regard to quicklime. During the slaking process, the volume of the lime increases, and analysis of historic mixes has shown that their ratios are actually closer to 1:2 or 1:1½. Today, the mix is normally specified in regard to slaked lime putty, so 1:3 of a modern mix may not exactly replicate an equivalent of a historic mix. Nonetheless, a mix broadly between 1:1½ and 1:3 is likely to be considered appropriate in most circumstances.

Strength of the Mix

The ratio of lime to aggregate can affect the strength of the mix. It is also affected by the amount and type of additives within the lime. Some lime mix products are termed Naturally Hydraulic Limes (NHLs), as they contain naturally occurring additions within the lime. These provide additional strength and have become popular recently. However, some can be more comparable in strength to cement than a traditional non-hydraulic lime and as such may not be suitable for a historic building. NHLs tend to be classified into three grades of strength – NHL 2, NHL 3.5 and NHL 5, with 5 being the strongest.

In most contexts in relation to historic buildings, a non-hydraulic lime should be sufficient, and stronger mixes are less

likely to be supported. However, stronger mixes, most likely NHL 2, may be supported where the relevant areas of the building are subject to more extreme weather conditions, such as render on a wall directly adjacent to a busy road which receives considerable splashback. Clear and convincing justification should always be provided for the mix proposed, particularly where stronger mixes are proposed.

Daub

Constituent Parts

- Unfired Clay – Minerals formed from various combinations of silica and alumina. The different combinations result in different types of clay.

- Fibres – Generally straw, flax or hair, used to hold the clay together.

- Additives – Similar to pozzolans in lime mixes, additives such as casein can be added to clay to improve its performance. Chalk May also have been used.

As there is no 'aggregate' comparable to a lime mix, the ratio is not such an important consideration, although the ratio of clay to fibres and additives would still be relevant.

Useful Resources

Emails

- heritage@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3
- planning@baberghmidsuffolk.gov.uk / 0300 123 4000 Option 5, Option 3

Websites

- Legislation for Designated Heritage Assets – HM Government. *Planning (Listed Buildings and Conservation Areas) Act 1990.* - Planning (Listed Buildings and Conservation Areas) Act 1990 (legislation.gov.uk)
- National Planning Policy – HM Government. *National Planning Policy Framework* - National Planning Policy Framework (publishing.service.gov.uk)

- Heritage Asset Search – Historic England, 2024. *Search The List* - https://historicengland.org.uk/listing/the-list/
- Babergh and Mid Suffolk Conservation Area Appraisals – Babergh and Mid Suffolk District Councils, 2024. *Conservation Areas.* - https://www.babergh.gov.uk/conservation-areas / https://www.midsuffolk.gov.uk/conservation-areas
- Listed Building Consent Process – Historic England, 2021. *Listed Building Consent Historic England Advice Note 16.* - https://historicengland.org.uk/images-books/publications/listed-building-consent-advice-note-16/heag304-listed-building-consent/
- Curtilage Listing – Historic England, 2018. *Listed Buildings and Curtilage: Historic England Advice Note 10.* - https://historicengland.org.uk/images-books/publications/listed-buildings-and-curtilage-advice-note-10/
- Guidance on Planning Permission Requirements – Planning Portal, 2024. - https://interactive.planningportal.co.uk/

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- Materials and Techniques – Historic England, 2024. - https://historicengland.org.uk/research/current/conservation-research/materials-and-techniques/
- Ecology Advice – Chartered Institute of Ecology and Environmental Management, 2016. *A Householder's Guide to Engaging an Ecologist Key Considerations.* - https://cieem.net/wp-content/uploads/2019/02/A_Householders_Guide_to_Engaging_an_Ecologist_Jan_2016.pdf
- Further Ecology Advice – Bat Conservation Trust, 2024. *Getting Personalised Advice.* - https://www.bats.org.uk/advice/im-working-on-a-building-with-bats/getting-personalised-advice

- Archaeology Advice – Suffolk County Council, 2024. *Suffolk Archaeological Service.* - https://www.suffolk.gov.uk/culture-heritage-and-leisure/suffolk-archaeological-service