

*Conservation in Tendring*



Listed Buildings

# Plaster Work and Renders

**Tendring**  
District Council





This advice is provided to guide those preparing applications for planning permission and/or Listed Building Consent or considering repairs. More general advice on both Listed Buildings and buildings in Conservation Areas can be found in the two advisory booklets which are related to this series of publications.

# 1 Introduction – Plasterwork and Renders

## Internal

Plaster is the term usually given to applied internal ceiling and wall finishes. Its finish is smooth and it serves to hide the structure underneath. It tends to be applied in two or three coats depending upon the substrate.

When used on ceilings it is applied over wooden laths in three or more coats. Similarly, wooden laths may be fixed to timber stud partitions. Alternatively the plaster may be applied direct to the masonry. For the purposes of this booklet traditional plaster was usually made from lime, either non-hydraulic (the traditional material which sets through drying in the air) or hydraulic, (a much later invention which sets chemically with water).

On internal work ox, goat or horse hair was used for reinforcing or binding the base coats, although grass, water reed or straw was also sometimes used.

Lime was combined with a filler in the form of well graded sand or grit to make plasters. Other fillers such as brick dust, chalk or sea shell were also used. Such fillers usually occupied about 70% of the volume of the mix.

Modern gypsum plaster is a common mineral consisting of hydrated calcium sulphate, and is obtained from natural sources or as a by-product of certain industrial processes. It is usually applied in two or three coats, with the base coat being the coarsest, and the finishing coat the finest. This material tends to be rather stiff, and waterproof, and it can prevent a wall from breathing. It should generally not be used for historic building repairs.

## External

Render usually refers to the hard-wearing lime-based plaster which protects external walls from weather, but may also act as a decorative covering, to enhance architectural quality. Sometimes it was applied simply to hide poorly built walls. As with plaster, lime was combined with sand or grit. The appearance is less shiny than internal plaster.

Roman cement is a chemically setting lime render which is breathable and dense but not as inflexible as modern cement.



*15th Century timber framed and plastered out building, Manningtree*



*18th Century plastered frontage, Great Clacton*



*Rendered cottages, Spring Road, St. Osyth*





*East Terrace, Walton - Stucco frontage*

Roughcast, by definition is a more roughly applied, lumpier render mix, made up of large stony aggregates, can more suitably be applied to ragged edges of existing render as the joint between new and old work is more readily disguised.

Modern Portland cement is sometimes, inadvisably and inappropriately, used to render old external walls. Some believe that because it is waterproof and strong, it will help to ensure the structure remains dry and in good condition. This is far from true.

## 2 Render and Stucco



*John Warner's House, Walton - part of the East Terrace development*

Render, usually a plain external wall coating has been in use from the very earliest times. Renders used for the walls of old houses range from single low-strength lime coatings applied over wattle or lath to high strength cement - based renders applied to brickwork.

The term "stucco" encompasses many different applications - from covering exterior walls in imitation stone to fine plaster applied to interior walls or ceilings and the creation of all manner of decorative mouldings. The term is now often employed to describe the high-quality renders used to provide a cheap yet convincing substitute for stonework - brick or rubble masonry being coated to look like best-quality ashlar, complete with mouldings, quoins and cornices.



*Rendered frontage with some patterning*

Stucco became highly fashionable in the late eighteenth century and was to remain popular throughout the Victorian period, being widely used for decorative window and door surrounds. Although the illusion was frequently reinforced by painting to resemble nicely weathered masonry, there was keen competition to produce stuccos that would dry naturally to match the colours of building stones.

The materials used for stucco varied considerably, but in England in the early nineteenth century stucco finishes were generally lime-based renders applied as either two part or three part coatings to building facades.

Towards the end of the nineteenth century a very different type of render, known as roughcast, became fashionable for mock-Tudor houses. The top coat of this coarsely textured rustic looking render is mixed with gravel. Pebble dash, a

slightly later type is similar in composition but a dry aggregate is thrown onto the wet render so that the aggregate remains exposed on the surface.

### 3 Ashlar Effect

On close examination what appears to be ashlar (dressed stone) blocks making up the ground floor of an early nineteenth century house often proved to be nothing more than an illusion created by a plasterer drawing a tool through wet stucco in an attempt to disguise cheap brickwork.

The horizontal and vertical joints of closely fitting ashlar blocks are frequently represented in the stucco-work of the period. Alternatively, pronounced grooves are incised - often as banded rustication, which does not include vertical joints. When executed by a skilled plasterer, it is difficult to distinguish rusticated stucco from genuine stonework unless part of the render has broken away to reveal a telltale brick background.

There various examples to be found in Tendring District.

### 4 Pargetting

Although much more widespread in other parts of Essex there are some local examples of pargetting in Tendring. This specialist decorating is found on timber-framed and plastered buildings of the 16th or 17th Centuries. The decoration takes the form of either incised or raised/moulded patterns. There are recognisable historic and characteristic patterns although the intention is usually to make the finished product look "hand made".



*Ashlar effect on Listed Building in Harwich*



*Clear Ashlar effect seen on front elevation of Wellington House*



*Simple patterning in plastered frontage*

*Brick and rendered frontages - The Green, Mistley*





*The Parade, Walton - c1830 Stuccoed frontage*

## 5 Modern Cement and Gypsum

Cements such as Ordinary Portland which is the most common, are very strong, inflexible and waterproof. Their application to old buildings is inappropriate and could damage the substrate, which is usually far softer and more flexible than cement. This inflexibility does not allow for seasonal movement of the structure, like lime does. When cement cracks (which in time it usually does), water can readily penetrate down the back of the crack. Localised areas of dampness develop, which can lead to rot. It can also freeze, expand and “blow” the render off the wall - sometimes damaging the structural fabric below.

Unfortunately however, some walls have been fully coated in cement. In these cases, it may not be advisable to remove the coating, as this could seriously damage the material underneath. A small patch in a discrete part of the wall should be removed as a test to clarify whether damage is caused by its removal.



*Rendered historic buildings - South Street, Manningtree*

If there are small areas of damage to cement render, then repairs should use cement of similar density and strength. In these instances, using lime is not appropriate because the different degrees of expansion and flexibility will cause further cracking, so allowing more water into the crack.

In the case of a listed building, if you wish to remove an entire wall of cement render, listed building consent will be required.



*Mix of brick and rendered historic buildings, Manningtree*

The use of modern bagged gypsum in plastering, even for small areas of patch repair, is not appropriate, as it is incompatible with lime plaster, for several reasons. Most types usually break down in the presence of moisture. However, whilst some bagged gypsum does resist the action of dampness, it contains a water repellent that seals the surface of the wall and prevents it from breathing. Gypsum is also very rigid and inflexible, it sets rapidly and can cause cracking at the edges where it joins with lime plaster. Its appearance is also different. It is smooth and usually finished mirror-smooth, rather than textured, like lime plaster.

## 6 External Renders - Repairs and Application of New Render

### Extent of repair

Simple patch repairing is the traditional approach to maintenance and although likely to create an irregular finish, is the preferred option.

The extent of repair necessary should be carefully ascertained by tapping the surface. Render that has detached from the backing will produce a hollow sound and may be noticeably loose. Only the very minimum should be taken off.

Many old buildings show generations of patch repair, which adds positively to the character of the structure.

### Applying new render

Plastering bead, fixed guides, metal lath or chicken wire must not be used to artificially straighten the edges of a wall. The render should follow the line of the building.

As a guide, two thin coats, each approximately 6mm thick, should be applied to the wall. If both coats are to be put on smoothly, then the first coat should be scored in a diamond pattern (about 75mm wide) to provide a good key for the second coat. Wetting between coats is necessary. Plaster should feather away at its edges, for example against existing sections of render.

The thickness and mix will vary, but a traditional combination of coats comprise the following;

Render coat	(9mm)	2 lime putty	5 sand
Float coat	(9mm)	2 lime putty	5 sand
Finish coat	(6mm)	1 lime putty	3 sand

When applying lime render, weather conditions must be taken into account. Where there is a risk of hot sun or drying winds, some form of protection should be erected in order to prevent rapid drying, which would cause the render to drop off. Render should not be applied when there is any risk of frost. In this instance, the render will lose adhesion before setting has occurred and again, in due course, will fall off.





*Ashlar effect on rendered historic building, Harwich*

## 7 Repair of Stucco

The formality of stucco means that more effort needs to be taken to disguise repairs than in the case of humbler, vernacular buildings.

When wet, new stucco is usually “lined out” to imitate large smooth faced stone blocks, which are known as ashlar. If a section of this material requires replacement, then it must be carefully cut out to follow the joint lines incised in the render—even if this means removing a little of the sound stucco in the process. Unlined stucco should be cut to rectangular profiles, if necessary extending the repair as before, where possible using details of the building to disguise any joints in the new material.

## 8 Historic Cements



*Shop units in Market Street, Harwich*

Roman cements tend to be applied smoothly to walls. Any missing areas should be repaired by cutting out neat rectangular sections and reapplying as above. Traditionally the mix was 1 part hydraulic lime, 1 part gritty sand.

Early Portland and Improved Portland cements were also usually applied smoothly. Traditionally, the mix for this material was generally between 1 part cement and 5.5 to 8 parts gritty sand.

## 9 Plaster and Render Materials

In all cases of repair, the new materials need to be compatible with the existing in terms of size of aggregate, consistency, texture and degree of adhesion.

For plaster, well graded means that aggregates should range in size from extremely fine up to about 0.6mm diameter and in shape from rounded to angular, in order to create a strong matrix for sound bonding. The air trapped within this sort of mix also helps setting.



*Detail of plasterwork / roof junction*

Hair in plaster should be approximately 1” long, and course. Goat hair is ideal. As is hair from the body of a horse. Both mane and tail hair is too shiny, as is human hair. This should



be added to the plaster at the time of mixing and immediately before application, because the alkalinity of wet lime attacks the protein in the hair and over a period of weeks and months may break it down.

Clumps of hair create weak spots in the finished work and can be as detrimental to the integrity of the plaster as using no hair at all.

For external renders the sand should also range from extremely fine out to about 1.2mm in diameter.

## 10 Decorating New Lime Plaster and Render

New lime plaster should be decorated with limewash. This water-thin coating usually consists of 1 part lime, 2 parts water. If however, following mixing but prior to application, the limewash in the bucket is found to have a sludge at the bottom, then a little more water is required to mix the constituent parts together.

The first coat of wash should be painted onto a damp wall, from the top down, to avoid streaking. A whole area of wall should be painted in one go, as join marks will show, when dry. Each coat must be dry before applying the next. Leaving the surface to dry overnight is usually sufficient.

Six coats or more should be applied to create a relatively smooth, visually uniform surface.

*Ramsey village*



*Part of Orwell Terrace, Dovercourt - Roman cement render*



*Church Square, St. Osyth - Rough rendered timber framed cottages c1500*



*Mix of brick frontage and rendered upper storeys, Church Street, Harwich*

On external render, lime wash used to be mixed with tallow, a type of animal fat. This produced a water droplet resistant but vapour permeable surface, which aid weathering. Nowadays, casein is often used, which aids vapour permeability, but has the added advantage of reducing dusting of the surface.

If a colour is required to finish the surface, pigmented limewash can be applied on the last 2 coats. Alternatively, in order to achieve a uniformly flat, deep colour, all 6 coats could be applied with pigment.

Alternatively, for internal plaster distemper can be used. This is a water-based dispersion of inorganic pigments in a glue or casein and linseed binder. Limewash and distemper can be purchased from suppliers ready-mixed in a range of colours.



*Rusticated rendered ground floor with cream gault bricks above c1820, Harwich*

Modern paints such as emulsions do not adhere well to lime plaster and can peel soon after application. They have reduced vapour permeability and huge expansion coefficients, which means they expand and crack, allowing rainwater to percolate behind. This is then trapped and results in peeling.

## **11** Listed Buildings - Applications for Consent

Applications for Listed Building Consent do not attract a fee which is a recognition that there is a cost incurred in preparing the necessary quality of Plans required to accompany such applications. The Council strongly advises the owners of Listed Buildings to engage properly qualified and experienced professionals to prepare such applications.

Such professionals can also provide advice on methods of repair. Wherever possible the Council expects owners of Listed Buildings to explore repair of historic fabric rather than seek to replace it with modern materials.



*Rendered rear elevations of Listed Buildings in Harwich*

This advice in this series of booklets draws on a variety of specialist publications prepared by other organisations including Essex County Council, English Heritage, S.P.A.B. Links to these publications and/or the organisations' websites are given at the end of each booklet.

## 12 Further information

Planning Policy Guidance Note 15 Annex C

English Heritage: Conservation Principles Policies and Guidance 2008

Essex County Council Leaflets:

Conservation in Practice: Plastering & Limewash  
Advice on the maintenance, repair and conservation of  
plastered and limewashed surfaces on traditional houses  
and service buildings.1999

Conservation Practice: Plastering/Lime wash 1986

Traditional Building Materials in Essex No.1 Pargetting 1982

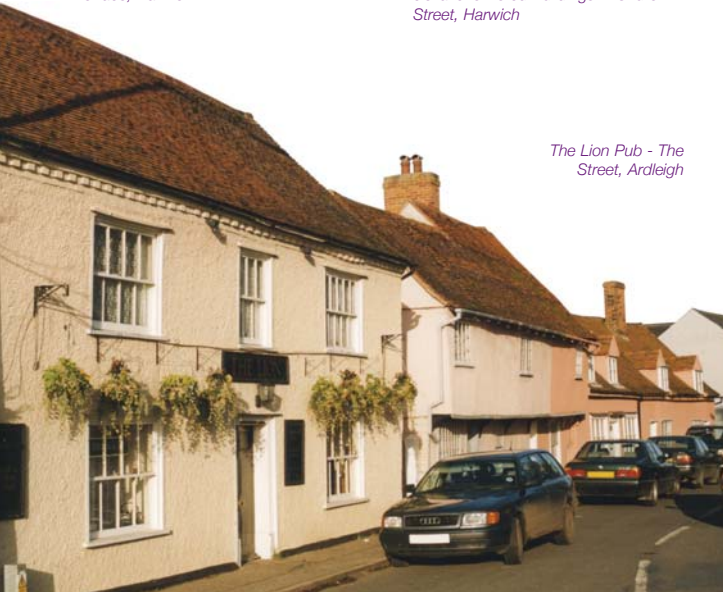
The Georgian Group Guide No.5 Render, Stucco & Plaster



*Early C19th Rendered / Plastered  
terrace, Harwich*



*Rendered ground and first floor  
elevations Listed Buildings in Church  
Street, Harwich*



*The Lion Pub - The  
Street, Ardeleigh*

## Other useful sources of information?

There are various national organisations providing design advice and guidance in relation to Plaster Work and Renders. These include the following:

**English Heritage**  
[www.english-heritage.org.uk](http://www.english-heritage.org.uk)

**Historic Environment Local Management - HELM**  
[www.helm.org.uk](http://www.helm.org.uk)

**Society for the Protection of Ancient Buildings - SPAB**  
[www.spab.org.uk](http://www.spab.org.uk)

**The Victorian Society**  
[www.victorian-society.org.uk](http://www.victorian-society.org.uk)

**The Georgian Group**  
[www.georgiangroup.org.uk](http://www.georgiangroup.org.uk)

**The Twentieth Century Society**  
[www.c20society.demon.co.uk](http://www.c20society.demon.co.uk)

**Institute of Historic Building Conservation**  
[www.ihbc.org.uk](http://www.ihbc.org.uk)

**Historic Towns Forum**  
[www.historictownsforum.org.uk](http://www.historictownsforum.org.uk)

**Essex County Council**  
[www.essex.gov.uk](http://www.essex.gov.uk)

**Communities and Local Government**  
[www.communities.gov.uk](http://www.communities.gov.uk)

Note; Tendring District Council is not responsible for the content of any external websites.



## Plaster Work and Renders

**For more information write to:**

**Planning Services**

Tendring District Council  
Council Offices  
Weeley  
Clacton-On-Sea  
Essex CO16 9AJ

