HERITAGE

TRADITIONAL BUILDING PRODUCTS

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Plastering with non-hydraulic lime

Before commencing plastering, ensure that all loose dust and debris has been well brushed off and the background is clean. All loose pointing should be raked out and re-pointed.

Thoroughly wet the background to control suction i.e. to ensure that the water is not drawn out of the wet plaster into dry masonry once applied.

At this stage, a tamping out coat can be applied if required. This coat should be 4mm per coat and a maximum of 2 coats should be applied.

Once the tamping coat has stiffened sufficiently then a scratch key should be added in preparation for the next coat.

Apply the scratch coat evenly over the masonry to a maximum of 8mm thickness (this thickness will help to reduce shrinkage). Take care not to over work with the trowel.

1. If a flat and even surface is required, lightly draw a straight rule or feather-edge over the surface to remove the high points.
2. If a more vernacular style is preferred, simply lay the coat over the surface of the wall, following the contours.

1. For a flat and even surface, this scratch coat will form the background for the floating coat and so once it has stiffened sufficiently then it too should be scratched (preferably 30mm diamonds)

A second coat (floating coat) is then applied once the scratch coat has hardened to such a degree that a slight indentation can be made by pressing with your thumb (this time will vary depending on the conditions at each site e.g. temperature, humidity etc.). If the scratch coat has gone very dry, then it must be well damped down before applying the floating coat. Once applied (again to a thickness of 8mm), the floating coat should then be ruled off level.

Once sufficiently cured, the floating coat should then be scoured /compacted using a wooden float. This process should be completed at least twice to further flatten and compact the plaster as it shrinks on drying. Further scouring may be necessary if there is continued shrinkage. This process is very important if shrinkage cracks are to be minimised.

When this scouring has been carried out, the surface should be keyed for the finish coat by brushing with a stiff churn brush or devil float.

For the finish coat, once again the previous coat is damped down to control suction. The finish coat is then applied in 2-3 thin coats and once stiffened enough, it is scoured to fill in any misses (gauls). This coat should can be left with a fine float finish or trowelled up smooth with a steel trowel.

2. A scratch coat will still form the background for the second coat and so once it has stiffened sufficiently then it too should be scratched (preferably 30mm diamonds).

For the more vernacular finish, this second coat becomes the finish coat as well. The plaster used will be the same as the scratch coat without the addition of hair. This coat is laid evenly over the backing coat, again following the contours of the wall. Once the coat has stiffened, it should be scoured with a wooden float in a similar fashion to rubbing up outside render. (Because of the unevenness of rough-walling, small self made wooden floats may be needed to follow the undulations of the wall).

Scratch coat: 3:1 haired mix @ 8mm thickness
Floating coat: 3:1 mix @ 8mm thickness
Finish coat: 1limestone sand:1½ lime putty (strength can be adjusted from 1:1 – 3:1) gypsum can also be added to increase the set and reduce shrinkage (factored in @¼)
Tamping out coat: 3:1 haired mix @ 4mm thickness (can add pozzolan to speed set).

External Render with non-hydraulic lime

External render is applied following the same principles as used internally. It should be appreciated however that much greater care needs to be taken of the work as it will now be exposed to wind, sun, rain, fluctuations in temperature etc.

Preparation of the Wall Surface

The successful application, bonding and correct hardening of hydraulic lime mortars, requires that the background should be clean, free from vegetation, free of containments and reasonably dry throughout the wall mass. The wall should be structurally sound and the masonry and bedding mortars in good condition.

Where natural weathering or incomplete repair works have previously been carried out, new repair work will be required to correct these defects. In masonry the natural weathering process can result in the loss of small stones, known as pinnings, which are traditionally placed into wide bed joints between larger stones, where these are missing their replacement should be carried out with any general repointing work which needs to be undertaken. (See repointing).

Where walls are covered in vegetation, lichen or moss, these should be removed, by use of cutting stems, treatment with biocides and eventual cleaning down with brushes, any remaining biological growth can retain water and may in time grow back through the new lime coatings.

The application of various coats of hydraulic lime should not be seen as remedial repair works to the masonry background, the replacement of loose or defective mortar, replacing missing stone pinnings, repairing damaged brickwork or stonework are distinct separate operations and there eventual outcome should be to present a reasonably flat and even surface, which is structurally sound and clean ready for the rendering application.

Suction Control and Bonding

Before the application of any new lime coatings it is vitally important to check the degree of suction within the background. Poor or excessive suction can result in a weak bonding with the substrate caused by rapid de-maturing of the newly applied render. This will result in a weak and powdery interface which could lead to later failure and separation.

In situations where suction needs to be controlled, wetting down will be required. On dense blocks or near impervious masonry, simply dampening the surface with a mist spray may be all that is required.

On very porous surfaces such as old brickwork considerable wetting will be required. Wet the wall with a hose, working from the top of the structure, downwards, this may need to be carried out the previous day and several times on the day before rendering commences depending on the substrate.

The objective of the suction control is to achieve a thoroughly damp surface, but not wet, i.e., the surface must not have running or standing water remaining on the masonry or brick; this could form a barrier between the coating and substrate.

A certain amount of suction is required for lime mortars to adhere and stiffen so the exact amount of wetting down is decided by the plasterer's experience.

Salt Contamination

Where new lime coatings are to be applied to masonry which is salt contaminated, the masonry should be allowed to dry fully before applying new renders. This will allow salt to be detected on the masonry and mortar joint surfaces, if excessive salt is identified clay or lime mortar poulticing may be required. Specialist advice should be sought. Salt contaminates should never be washed from the surface, as this will result in the crystallized salt returning to a soluble state and retreating back into the pores of the masonry or brick. Where detected on the masonry surface, the salts should be brushed from the surface and cleaned away from the structure.

Techniques or render application (2 or 3 coat work)

The techniques employed in the application of lime plasters should be to ensure a correct bonding with the background while striving to minimise shrinkage and rapid drying. These techniques should be followed throughout the plastering process.

Lime plastering is generally applied in 3 coats, but it is common to find 2 coats or even single coat work in vernacular or early structures. In 3 coat work the first coat on masonry or brickwork is generally known as the scratch coat. This coat is applied at a maximum thickness of 8mm and is applied by use of a steel trowel or thrown onto the wall by use of a harling trowel and then flattened in by the steel trowel.

When the coat has firmed up but has not gone hard, the plaster is keyed or scratched up to produce a key for the following coats. The keying up is carried out by use of a lath scratcher or similar toothed instrument and care should be taken not to cut through the plaster coat back to the background.
The keying up is generally in the shape of diamonds of approximately 30mm spacing. This coat should be allowed to harden (go green) before the next coat of plaster is applied. Before applying the second coat the first coat should be checked for shrinkage cracks, and these should be filled with plaster before proceeding with further coats. The

first coat should be brushed down to remove any dust, which may have blown onto the surface. The first coat should then be damped down to ensure that the second coat is applied to a damp but not wet surface.
This second coat is called the floating coat and is the coat, which is straightened to ensure a flat and even surface, after this coat has been straightened; the surface of this coat is scoured up with a timber or polyurethane float as was described in relation to internal plaster.

Surface Finish
Where possible the texture of the finished surface should be left slightly open or coarse, as this will allow better evaporation of moisture from the surface; the finished work should not be closed or "trowelled" up with a steel trowel.

External Render with wet dash lime finish
The wet dash lime coating known as harling or roughcast is the most commonly applied external finish to be found on vernacular architecture in Ireland. The harling material is a combination of aggregates and lime, mixed into a slurry consistency and applied in a fluid state. Historically the harling was applied directly onto the masonry walls which had previously been evened out by pointing the wall flush and filling small holes with stone pinnings and mortar. Towards the end of the nineteenth century it became commonplace to apply one or two towelled undercoats to flatten the background before casting on the lime harling.

An extension of this practice became known as dry dashing or pebble dashing, where dry shingle is cast into a wet adhesive coat. However, in traditional harling the finish coat is applied directly to the masonry background.

Rough cast – where the finish coat is thrown on. Basically this is a wet dash finish applied over a multi layer render. Provides one of the most durable render finishes.

Harling – a wet dash finish generally applied in a series of 2-3 thin thrown coats without underlying trowel-applied render coats. (requires careful preparation of the masonry surface prior to application including pinning/galleting work etc.)

Scratch coat: 3:1 haired mix @ 8mm thickness
Floating coat: 3:1 mix @ 8mm thickness
Finish coat: 3:1 mix @ 5mm thickness or rough cast application
(Pozzolan can also be added to the mortar to provide sufficient hydraulic set - approx 10%)

Alternatively, suitable masonry preparation can be performed followed by several thin harled coats.

Roughcast/harling mix: 1 pea gravel/graded grit: 1 lime putty (some of the lime mortar can also be added to give the desired consistency).