

BRYNKINALT HALL, BRYNKINALT, WREXHAM, LL14 5NS

Harry Whittaker Dip Arch [Oxford] RIBA AABC

METHOD STATEMENT FOR THE REPLACEMENT EXTERNAL RENDER

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1.1 INTRODUCTION

Following the request from Iain Hill Trevor of Brynkinalt Hall, we have carried out an inspection of the site and prepared the following specification/ method statement for the re rendering of the external walls following the removal of the twentieth century cement render.

1.02 Existing condition

The early 19th century lime render was removed in the 20th century and the brickwork pointed using a cement based mortar. The east elevation was re-rendered in the mid 20th century using a cement-based render system. This has caused significant problems and the majority of the render is now loose having broken away from the brickwork behind. This includes the corner turret and low-level boundary wall around the eastern terrace. This is described in detail in the schedule of repairs report.

1.03 Removal of the existing cement-based render.

The viability of render removal without causing damage to the existing brickwork substrate will be tested by the removal of render in a small trial areas. Access scaffolding is to be provided to ensure the safe removal is possible and that the condition of the underlying brickwork can be continually monitored. The render removal trial will be carried out with extreme care, using a hammer and if necessary, a chisel working at a 45º angle (or less).

The results of the render removal trial will be reported to the Architect. From the areas already exposed, where frost action has dislodged the hard cement render, it is anticipated that the underlying brickwork will be considerably damaged. During the original brick firing process in the kiln, these bricks would have formed a fire skin around their exterior. This fire skin has a slightly higher density than the interior body of the brick. Modern brick manufacture set at continuous high temperatures tends to form an even consistency throughout the brick. The bond between this hard cement render and the softer underlying brickwork will result in the loss of this outer layer of brick. The render removal will unfortunately result in the loss of patches of brickwork and leave the masonry in a very poor condition.

1.04 Masonry repair.

The extent of the masonry repair work is to be determined as the render is removed. This will all be carried out in lime mortar and brick with additional joint strengthening work using twisted stainless-steel bar as set out by the Structural Engineer. The underlying brickwork will be reviewed and recorded (photographed) on completion of render removal then monitored over the space of a few weeks to help identify any issues that may present.

All loose pointing that needs to be removed is to be carefully raked out by hand. Hacksaw blades may need to be used to clean out thin or narrow joints. Slightly wider joints will be cleaned out with flat chisels. A brush will be used to remove mortar dust. In the case where repointing is required, this will be carried out using an appropriate lime based mortar, which shall be firmly packed into all of the joints, filled from back to front to ensure no voids. The joints shall be then raked to provide an adequate key for the new render. Any issues that arise during the trial areas will be discussed and subsequent action agreed with the Architect, Structural Engineer and Local Authority Conservation Officer.

1.05 Lime render.

The following specification is taken from the guidance published by Ty-Mawr Lime Ltd of Brecon

Building Material.	Site Type	Suggested Base Coat	Suggested Top Coat – please note the top coat should not be stronger than the base coat
Soft Stone, Brick.	Internal	Fat Lime x 2 coats	Fat Lime x 1 coat
	External	NHL 3.5 / NHL 2 x 2 coats	Fat Lime x 1 coat or NHL 3.5/NHL 2 x 1 coat
Hard Stone Hard Engineering Brick	Internal	Fat Lime x 2 coats NHL 3.5 / NHL 2 x 2 coats,	Fat Lime x 1 coat
	External	NHL 3.5 / NHL 2 x 2 coats	NHL 3.5 / NHL 2 x 1 coat
Concrete Blocks.	Internal	NHL 3.5 / NHL 2 x 2 coats	Fat Lime x 1 coat

	External	NHL 3.5 / NHL 2 x 2 coats	NHL 3.5 / NHL 2 x 1 coat

The majority of the masonry base at Brynkinalt will fall into the soft stone/ brick category but this should be determined on site as each area of masonry is exposed.

1.06 A conventional cement mixer can be used although for larger projects a roll pan or paddle mixer is preferable. Lime mortars mixed in drum mixers can be prone to balling but use of particular mixing techniques can reduce this. Switch the mixer on and dampen down the inside of the drum as this will help to reduce the amount of dust and prevent the lime from sticking too much. Switch the mixer off before adding two thirds of the water and half of the sand followed by all of the lime. Switch the mixer on, allow the water to thoroughly disperse throughout the mix (15-20 minutes) before adding the rest of the sand and more water if required. You will have to experiment for the first mix as the quantity of water will vary with sand moisture content – but be CAUTIOUS, for a 3:1 mix, initially add 6 litres of water, 30 litres of sand and then 20 litres of lime, mix, then add the remaining 30 litres of sand and adjust the water.

add hair or synthetic fibre (approx 1.5kg per tonne) to improve the strength and durability of the render, tease it in towards the end of the mixing. and use the mix within 2 hours. Surface preparation The main points are to ensure there is a good keying surface for the render, the wall should be structurally sound and in good overall condition.

Remove any loose material. The walls should be clean and free of vegetation.

Dampen the surface to prevent rapid suction of water from the plaster/render, usually a mist spray will suffice but on very porous walls several applications of water the previous day and in the hour or two before rendering may be required using a hose.

Where evident, salts should be brushed from the surface and cleaned away from the structure, do not wash down as this will cause the salts to retract into the building.

If there are large voids in the wall these should be filled first, this is called “dubbing out”.

1.07 Application

After damping the surface, the plaster/render can be laid on using the normal technique in two coats of approx. 8-10mm.The first coat should be left to stiffen up and then a float used to compress the render over the whole area. Applying the second coat too early (i.e. before the material has stiffened) can weaken the render. The result may be voids deep in the render which make the render vulnerable to frost damage. Within an hour or two, the surface of the first coat should be scratched over using a suitable wire comb.

Once the first coat has hardened enough a similar technique is used for the second. The time interval between the two will vary depending upon the temperature. As little as 24 hours in warm conditions but several days if cool during this time, it may need damping down if drying too quickly.

The mix for the top coat will be different, it is usually a weaker mix than the background mixes, (refer to specification table) proceed as above, it should be ‘floated up’ as the surface stiffens, in a similar way to the previous coats.

1.08 After care

The plaster/render must be kept moist for several days to a week after application of the final coat. Water will tend to drain down from the top of the work and therefore particular attention must be given to spraying the upper sections. Remember water is essential for the hydraulic set. It is important while maintaining the moisture to prevent rapid drying from wind and bright sunlight. Covering the work with damp hessian is the best procedure.

Protect from frost - hessian covers or bubble wrap should be used. However a circulation of air must be maintained between the cover and the render. Do not use anti-freeze additives. During daylight hours if warming winter sun is available, covers should be lifted to allow heat to be absorbed and then replaced during late afternoon. Even under these conditions a circulation of air is advisable between covers and masonry. To avoid frost damage the best practice is to schedule the work to be carried out during spring, summer and autumn and avoid all temperatures of 5oC or less

1.09 Additional note for interior plastering with Hydraulic Lime

Techniques for interior plastering using hydraulic limes are the same as for exterior work with the exception that for

base coats a well graded, sharp sand is still recommended. Finer sands can be used for top coats depending upon the finish required or a fat lime finish plaster can be used.

1.10 Prevention of shrinkage

Shrinkage 'cracking' is a risk with all renders. However on cement renders cracking will allow water behind the render with little ability for it to evaporate out. Lime renders are designed to breathe. Small shrinkage cracks in the scratch coat are okay and will be filled in subsequent coats, nevertheless excessive cracking should not be accepted since it may be an indication of early failure. The causes of shrinkage cracking are:

- too much water in the mix forces particles of sand and lime apart.
- excessive suction from the substrate caused by lack of damping down prior to applying render.
- rapid drying caused by strong sun or drying winds.

If the last two points are assessed as the cause of the shrinkage, consideration should be given as to whether the setting process has been stopped due to lack of water. If only a few days have elapsed then remedial spraying may allow the set to continue.

1.11 Storage

Lime should be stored airtight, dry and frost-free.

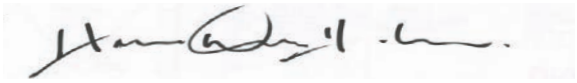
1.12 Painting of renders and plasters

With lime renders and plasters it is recommended that limewash or a breathable paint is applied. The use of synthetic paints is not recommended since they will prevent subsequent carbonation. Curing of the render takes many months, they should not be painted until carbonation is complete.

1.13 Anticipated Listed Building Consent conditions.

LBC 41. Before work begins, a specification for the external render to be used shall be approved in writing by the Local Planning Authority to define the mortar mix; the number of coats; finish and backing material; and, relationship to existing finishes and openings. (LBR 01).

LBC 42. Before work begins, sample panel(s) of all new render shall be provided on site showing the proposed render mix and final surface texture, and the materials and methods approved in writing with the Local Planning Authority and carried out accordingly. The approved sample panel(s) shall be retained on site until the work is completed and the Condition is discharged. (LBC 01).



Signed: .....

Harry Whittaker, Dip. Arch (Oxford) RIBA. AABC 29th April 2024



South East corner of the East elevation showing the damaged and missing cement render.



The central section of the East elevation



North East corner of the East elevation showing the structural movement together with damaged and missing cement render.



The cement render return to the north elevation.

