

Specification for Flintwork & Brickwork

in connection with

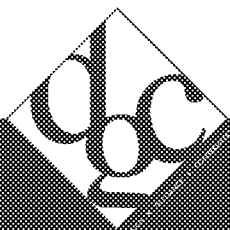
Clymping Mill

on behalf of

Mr G. Love

prepared by

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FLINT

Prior to commencement of works carry out inspection of all the surrounding flintwork, Record photographically areas to be repointed / repaired showing:

- surrounding work
- joint sizes
- texture of pointing
- style of dressing (brick)
- any special or unusual features

Cross refer areas of repair on drawing, schedules or other to the Contract Administrator's approval.

Prepare mortar samples as required by the contract administrator to ensure that the materials and finish of the new flintwork matches as closely as possible the existing garden flint walls.

Agree with the contracts administrator the bond and finish of the flintwork from the existing garden walls and prepare a sample panel of flintwork to replicate the existing appearance in all respects, (including finishes, colours, courses, patterns, etc.) The sample panel to be constructed as a free standing 1m x 1m structure, retained on site for the duration of the works.

The lime mortar mix is as per the sample analysed by Lime Centre, Winchester and their recommended mix to achieve a like-for-like lime mortar (see attachment) with advisory notes included from DGC (Historic Buildings) Consultants Ltd.

Generally the mortar mix shall replicate the existing which shall be determined by analysis, otherwise:

Sheltered Exposure

1 part	lime putty
1.5 parts	Well graded sharp sand
1.5 parts	Porous limestone
1 part	Brick pozzolan

Moderate Exposure

1 part	Natural hydraulic lime (NHL2)
1.5 parts	Well graded sharp sand
1 part	Porous limestone / Grit to 6mm

Severe Exposure

1 part	Natural hydraulic lime (NHL3.5)
2 parts	Well graded sharp sand with grit to 6mm

ADMIXTURES AND MASONRY CEMENT WILL NOT BE PERMITTED

NOTE: Gauging boxes must be used in the preparation of mortar and the correct preparation of mature lime putty, by chopping and ramming. The water content of the mortar mix is to be strictly controlled and in accordance with best practice. The workability of the mortar is to be achieved using a paddle mixer or similar and approved.

Structural Stability

The Contractor shall be entirely responsible for the structural stability during repairs and shall arrange that sufficient temporary supports are used as works proceed to keep the structure stable until repair is completed.

Flintwork & Brickwork

Temporary bracing where deemed necessary, shall be designed by the Contractor so that it does not impede work on site or in any way weaken or impair the serviceability of the structure.

Removal / Taking down Flintwork

Identify areas of flintwork to be removed as specified and provide all the necessary temporary support to adjacent areas to prevent damage or collapse during the works.

Where aggressive cementitious mortars exist and of some depth 'stitch drill' with a masonry drill to loosen.

Using sharp tungsten tipped chisels remove all inappropriate cement mortar and carefully take down flint garden wall in accordance with the contract documentation. Ensure that the flints are not damaged during the demolition process. All existing flint to be set aside, cleaned to remove all trace of existing mortar and stored avoiding damage to the flints ready for re-use. Particular care should be taken where the flint is knapped and regular.

At junction between work to remain and area of repair, adopt methods necessary to prevent displacement of existing structure during taking down operations.

Use manual tools only.

Inform Contract Administrator if signs of structural movement are found during taking down operations.

Remove remaining jointing pointing attached to surrounding work adopting methods which will ensure that no disturbance is caused. Remove loose material and dust taking corework back to a sound backing.

Remove existing metal fixings such as nails, metal cramps, dowels and brackets within area as directed by the Contract Administrator.

Remove remnant corework, pointing and jointing materials and other unwanted debris from site to Local Authority tip or similar.

Ensure that the bond, joint size and any other special or unusual features are replicated in accordance with preparations records. In walls which are faced on both sides build in bonding stones of sufficient length to tie facework into the core. Flush out voids with clean water as specified to remove all loose material and reduce suction. Wet backing and rebuild flintwork in short lifts taking care to match the existing flintwork. Ensure that long tailed flints are well anchored in to provide sufficient bonding. Where there is a deficiency in the bonding flints use austenitic stainless steel wire, bronze or similar and approved ties or anchors. Mortar for rebuilding should be as dry as possible while achieving a workable mix.

Pack mortar around the flints using a suitable pointing iron until a slightly recessed joint is achieved. Allow to set overnight before tooling back to expose aggregate where necessary as specified for re-pointing.

Repointing Flintwork

Rake out joints to a firm backing and to a minimum depth of 38mm, using quirks, chisels and tooth masonry chisels or methods necessary to prevent damage to the surrounding work. Cold chisels may wedge joints and should not be used. Generally use manual tools, only where aggressive cementitious mortars exist and of some depth should a masonry drill be used to 'stitch drill' and loosen. Otherwise no power tools will not be permitted. .

Where mortar has disintegrated, and the joints are empty they should be deep tamped with grout ensuring that the grout is not closer than 38mm from the finished face of the flintwork. If mortar, when tamped, finishes less than the required depth of cutting out for repointing, it should be cut back as necessary for repointing.

Impact, when cutting out should be at an oblique angle to the joint face, not direct into it. Cutting out should leave a clean square face at the back of the joint for optimum contact with the new mortar. Well attached mortar to remain insitu.

The joint should be carefully cleaned out with a bristle brush, adequately stiff to remove loose material, and flushed out with clean water. All loose material must be removed from the joints before filling can commence. This operation is to be carried out from top to bottom avoiding cross contamination.

Flintwork & Brickwork

Where the joints are colonised with algae or lichens, a biocide must be used on the dry surfaces during the cleaning out. Residue from the chemical treatment will be washed away with clean water, again working from top to bottom.

Repoint in a continuous operation working from the upper level of repair downwards

Liberally wet existing mortar, press home new mortar firmly preventing voids forming behind, but avoiding encroaching over arises of surrounding flints. Do not try and achieve compaction from the surface alone.

Finish slightly recessed with a rag or stick or brush (NOT a steel trowel).

Brush after an initial set to remove laitance from the mortar surface and to expose the aggregate.

Drying

During periods of rapid drying, either by general temperature, sunlight or wind, ensure that the joints are prevented from rapid drying by spraying with fine water sprays, and covering with sheets of wet Hessian. Ensure that drying takes place steadily over a period of not less than 5 days.

The Hessian should not be in direct contact with the mortar.

Where there is the risk of freezing or rain, dry Hessian and polythene sheets should be provided for protection. Completed face work shall be protected and kept clean and free from mortar droppings and scaffold splash

BRICKWORK

Materials

All Clay bricks shall be first quality second-hand imperial bricks to be approved by the Contract Administrator prior to purchase.

All bricks to be sound, clean and free from salt contamination.

Samples of bricks shall be submitted to approved by the Contract Administrator before deliveries are made to site.

All bricks shall be carefully stacked on site in accordance with good practice and in no circumstances shall they be tipped.

Old sound bricks obtained from the pulling down may be re-used if properly cleaned and approved by the Contract Administrator.

The Contractor and Contract Administrator are to confirm bricks to be replaced in accordance with specification

The Contractor is to ensure that new brickwork for repairs matches existing in colour, texture and size by taking dimensions prior to cutting out or, if missing, from adjacent bricks as agreed with the Contract Administrator.

The Contract Administrator is to approve samples of brickwork, in writing, prior to rebuilding work progressing.

Mortars

Hydraulic lime shall be natural hydraulic lime, NHL2.5 or 3.5 or to BSEN459:1995 as appropriate and in accordance with supplier / manufacturer's recommendations.

Mortar for bedding and pointing shall generally comprise:

1 : 3 : Hydraulic lime : Evenly graded Sharp Sand (not marine)

Admixtures and masonry cement will not be permitted.

Alternatively refer to the results analysed by Lime Centre, Winchester and their recommended mix to achieve a like-for-like lime mortar (see attachment) with advisory notes included from DGC (Historic Buildings) Consultants Ltd.

Flintwork & Brickwork

Sand

The sand for mortar shall be clean, naturally occurring sharp pit sand, or crushed rock or gravel in accordance with BS1200 well graded in the range 0 mm to 2.5mm with a good proportion of sharp grit to aid adhesion. Sand should be washed clean of loam and clay. Marine sand should not be used due to the high salt content.

Samples of mixed aggregate shall be put forward for approval, and after agreement the mix shall be recorded and thereafter strictly adhered to unless varied by written instruction.

Make up samples of mortar for approval and carry out trial areas for experimental purposes. Allow to adjust, remake and agree as necessary with the Contract Administrator the details of the mortar. Allow to remove rejected samples and re-prepare for final work.

Water

Water shall be clean and pure, free from acid, salt, dirt or other contamination or deleterious material obtained from the mains supply.

Cramps and Dowels

Copper alloy of grades listed in tables 8 and 12 of BS2780

Austenitic stainless steel sheet strip and plate to BS 1449 Part 2

Cramps to be screwed to face of timber posts and studs both sides of each panel to every third course of brickwork with stainless steel screws.

Workmanship

British Standard Specification and Codes of Practice

All works shall be carried out generally in accordance with British Standard Specifications and Codes of Practice.

Quality of Materials and Workmanship Standards

Only best quality materials are to be used strictly in accordance with British Standard Specification requirements. Substitute materials of a doubtful origin, materials that are not from sustainable resources, particularly where timber is concerned, are prohibited.

A high standard of workmanship is required. The Contract Administrator will closely scrutinise the quality of the workmanship employed on this contract and will not hesitate to condemn any work falling below the high standards that are to be achieved.

Samples

Provide Contract Administrator with samples of the following:

All brick types specified.

Sample of cutting and cleaning joint at location to be approved by the Contract Administrator.

Tools to be used: Pointing irons.

Evidence of previous experience and details of work previously undertaken by the bricklayer.

Sample Panels

Not required in the case of the flint and brick wall to west of Mill House as a portion of original walling remains.

Protection

Protect all new and adjacent work to prevent damage by weather, impact or staining during site operations.

Protect remaining works from damage or collapse.

Dispose of all builders debris and cart away from site to Local Authority tip.

Specification and managing the project on site.

Removal / Taking down Brickwork

Remove / cut out damaged bricks working from the upper level of the repair downwards. Bricks in sound condition within the zone of repair are to be set aside for re-use.

At junction between work to remain and area of repair, adopt methods necessary to prevent displacement of existing structure during taking down operations.

Use manual tools only.

Inform Contract Administrator if signs of structural movement are found during taking down operations.

Remove remaining jointing pointing attached to surrounding work adopting methods which will ensure that no disturbance is caused.

Remove loose material and dust taking corework back to a sound backing.

Remove existing metal fixings such as nails as directed by the Contract Administrator.

Provide all necessary supports for existing brickwork or other.

Remove defective bricks, remnant corework, pointing and jointing materials and other unwanted debris from site to Local Authority tip or similar.

Metal Cramps

Remove built in metal cramps, dowels and brackets within area as directed by the Contract Administrator.

Resetting / Replacing

With least possible handling carefully pack and stack to prevent damage during transport.

Check the bricks delivered to the site to ensure that:

The bricks are not damaged.

The bricks are those ordered.

Each delivery is consistent in appearance with previous deliveries. Do not accept if variation is excessive.

Store bricks in stable stacks, clear of the ground, clearly identified by type etc..

Protect from inclement weather and keep dry.

Prevent soiling, chipping and contamination by salts and other deleterious materials.

Coursing

Arrange brick courses to line up with existing work.

Structural Stability

The Contractor shall be entirely responsible for the structural stability during repairs and shall arrange that sufficient temporary supports are used as works proceed to keep the structure stable until repair is completed.

Temporary bracing where deemed necessary, shall be designed by the Contractor so that it does not impede work on site or in any way weaken or impair the serviceability of the structure.

Flintwork & Brickwork

Laying Bricks

Lay bricks plumb, level, square and true or in such a way to match existing. Spread only sufficient mortar to bed each brick.

Ensure that there are no hard lumps in the mortar which could prevent even bedding.

Bricks should be well wetted to reduce suction before laying. Hollow bedding is not permitted.

Keep brickwork clean during construction and until practical completion. Ensure that no mortar encroaches on face when laying. Turn back scaffolding boards at night and during heavy rain. Rubbing to remove stains or marks will not be permitted.

Carry up work with no portion more than 1.2m above at any one time, racking back between levels. Do not carry work higher than 1.5m in a day, as specified in BS 5628 code of practice for masonry.

Do not use frozen materials and do not lay on frozen surfaces.

Do not lay bricks when air temperature is below 5 degrees Celsius or above over a 24 hour period unless mortar is kept at a constant minimum temperature of 5 degrees Celsius when laid and walling is protected.

Maintain temperature of the work at 5 degrees Celsius or above until mortar has fully hardened.

Adequately protect newly erected walling against rain or snow by covering when precipitation occurs and at completion of each days work.

Mortar that has failed to set after 7 days must be assumed to be damaged by frost. Ensure mortar has set and is not unset but frozen. If the damage is merely to the surface of the joint the work can be made good by raking out and repointing. All defective material should be raked out. The depth to be removed should not be less than 25mm. In cases of more severe damage the work is to be rebuilt.

Take down and rebuild any brickwork damaged by frost or other adverse conditions resulting from non-compliance with this specification.

Bricks to be laid in stretcher bond to match the existing, generally four courses of brickwork will rise 300mm.

Finishing Joints: Face Brickwork Generally

Set joint slightly back from brick face unless instructed to do otherwise so by Contract Administrator.

Match original lime work by stippling with a wet bristle brush following the initial set of the mortar.

Rebuilding Elements with New Brickwork

Replacement bricks to match existing. Dampen bricks prior to laying to reduce suction.

Ensure that bond, joint size and that any other special or unusual features are replicated as recorded and to match.

Joint finish as previously specified completed as the works progress

Repointing Face Brickwork

Rake out joints, using quirks, chisels and tooth masonry chisels or methods necessary to prevent damage to the surrounding work. Cold chisels may wedge joints and should not be used. Generally use manual tools only, power tools will not be permitted. Mason's needle gun may be used with the Contract Administrator's written permission. Operators will have to demonstrate their competence using a needle gun to the Contract administrator's satisfaction. The vibratory pressure should be kept as low as possible and chisels very sharp. In all instances chisels will not exceed 12mm across the cutting face.

Joints should be cleaned out to a minimum depth of 30mm or not less than their width, whichever is greater. Wide joints, over 30mm should be cut to a minimum depth of 38mm. Where mortar has disintegrated and the joints are empty they should be deep tamped to fill the mortar joint to the required depth for pointing. If mortar, when tamped, finishes less than the required depth of cutting out for repointing, it should be cut back as necessary for repointing.

Flintwork & Brickwork

Impact, when cutting out should be at an oblique angle to the joint face, not direct into it. Great care should be exercised to avoid cutting out into the masonry or increasing the joint width. Cutting out should leave a clean square face at the back of the joint for optimum contact with the new mortar. Well attached mortar to remain in situ.

The joint should be carefully cleaned out with a bristle brush, adequately stiff to remove loose material, and flushed out with clean water. All loose material must be removed from the joints before filling can commence. This operation is to be carried out from top to bottom avoiding cross contamination.

Where the joints are colonised with algae or lichens, a biocide must be used on the dry surfaces during the cleaning out. Residue from the chemical treatment will be washed away with clean water, again working from top to bottom.

If the joints are dry they should be re-wetted before placing new mortar to prevent suction and rapid drying out taking place.

Allow bricks to settle and the repoint in a continuous operation working from the upper level of repair downwards

The mortar is to be pushed into the joint from a spot board and ironed in using the maximum possible pressure. Press the mortar well into the joints using a pointing iron, preventing voids forming behind, but avoiding encroaching over rises of surrounding bricks. do not try and achieve compaction from the surface alone.

Do not use a wire brush or scour or mark the final set.

Finishing Joints

Set joint slightly back from brick face unless otherwise instructed by the Contract Administrator. Where rises are eroded set joint back to round edge avoiding the creation of ledges which may trap water. Where water may be trapped create a flounced run off.

Match original lime work by stippling with a wet bristle brush following the initial set of the mortar. Do not use a wire brush or scour or mark the final set

Wash surrounding work with clean water to prevent staining.

Drying

During periods of rapid drying, either by general temperature, sunlight or wind, ensure that the joints are prevented from rapid drying by spraying with fine water sprays, and covering with sheets of wet Hessian. Ensure that drying takes place steadily over a period of not less than 5 days.

The Hessian should not be in direct contact with the mortar.

Where there is the risk of freezing or rain, dry Hessian and polythene sheets should be provided for protection. Completed face work shall be protected and kept clean and free from mortar droppings and scaffold splash.

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