Kirk Mill, Chipping

Specifications for External Envelope Repair Works

1.0 Cleaning of Stonework

1.1 Light cleaning is to be carried out externally sufficient only to remove surface dirt, algae staining, lichen and vegetation growth. The cleaning work is to be carried out before undertaking repair and remedial works.

1.2 The cleaning is to be carried out by specialists using the non-abrasive DOFF System of steam cleaning and/or the JOS System with abrasives and pressures appropriate to the substrate and the type of material to be removed. Wherever possible low-pressure cleaning methods are to be used. In all instances take all necessary precautions to minimise dust and nuisance.

1.3 Prior to carrying out general cleaning works conduct trials and prepare a sample panel min 1m x 1m for approval by the Employer and the Local Planning Authority/Conservation Officer.

1.4 Before commencement of the cleaning works all redundant fixtures, fixings, clips etc are to be removed from the existing walls. Surfaces not designated for cleaning are to be prevented from damage, including marking and staining and the ingress of water, cleaning agents and detritus. Where applicable additional protection is to be provided to windows and openings using Visqueen/polythene sheeting secured to the window/opening.

2.0 Stonework Repairs

2.1 The extent of stonework repairs shall be as identified on the Structural Engineer's drawings and/or schedule of works.

2.2 Retained masonry in the vicinity of the repair works is to be disturbed as little as possible and shall not be cut or adjusted to accommodate new or reused masonry.

2.3 Replacement stone for the repairs shall be of a type to match the existing masonry. The stone shall be free from vents, cracks, fissures, discolouration, or other defects that may adversely affect strength, durability or appearance and it shall be thoroughly seasoned, dressed and worked to match the existing masonry.

2.4 The orientation of the natural stone bed is to be horizontal in plain walling and vertical and perpendicular to the wall face in projecting stones and copings.

2.5 Replacement stone shall be accurately aligned and set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.

2.6 Stone shall be laid on a full bed of mortar with all joints filled and exposed faces kept clear of mortar and grout.

3.0 Repointing Stonework

3.1 The general conservation approach to be adopted is to minimise the extent of repointing wherever possible. Repointing is to be carried out externally in areas to be determined and agreed with the Employer and the Local Planning Authority/Conservation Officer prior to carrying out the works. General repointing, such as to Elevation 1, is only to be carried out where the existing pointing is in poor condition generally or where to carry out selective or localised repointing would result in an unsightly or unacceptable appearance. Prior to carrying out any repointing prepare a sample panel min 1m x 1m for approval by the Employer and the Local Planning Authority/Conservation Officer to the method and finish of pointing proposed.

3.2 Carefully rake out joints by hand to form a square recess to a depth of 25mm. Remove all loose and friable mortar, working deeply into joints where necessary. Remove all unsightly strap pointing and all hard cementitous mortar by carefully cutting out small pieces at a time to avoid damaging the stonework. Use a quirk, plugging chisel, hand saw or other device specially devised for the purpose. Do not use angle grinders, mechanical saws or other mechanical tools. Ensure that the width of the cut-out does not exceed the original joint thickness. Flush out the joints with clean water to remove all debris and dust.

3.3 Ensure that joints are dampened but not over wet immediately prior to pointing. Pack mortar into joints using a pointing tool of suitable width to fit the joint. Strike off and finish joints to follow as closely as possible the original profile. Keep slightly back (1-2mm) from the arris so that the masonry is emphasised visually rather than the mortar. Allow initial set to take place, minimum 24 hours, spray lightly with clean water through a fine spray and very lightly wipe with a narrow brush to expose the face of some of the aggregate.

4.0 Mortar for Repointing Stonework

4.1 The mortar is to be of a colour and texture to match the existing pointing. Samples of the existing mortar are to be taken and analysed to determine the constituents, proportion, grading and source matching materials. The mix proportion for repointing is to be determined by the number/type/variation of the constituent parts, but the following mix should be assumed at this stage:

- 1: 2.5 NHL3.5 hydraulic lime: sand.

4.2 Sand to be to BS EN 13139, type to be agreed subject to samples, and mixed together with crushed stone aggregate, type to be agreed subject to samples, with grading to approval.

4.3 When the proposed mix is finalised obtain approval to the mix from the Employer and the Local Planning Authority/Conservation Officer before proceeding.

5.0 External Render

5.1 Carefully hack off and remove the existing render. Wash and brush exposed brick background to remove dust and loose material.

5.2 The render is to be applied direct to the existing brickwork. Prepare the background by means of raking out the joints.

5.3 Damp down the surface. On very porous walls repeat several times 1 – 2 hours before rendering.

5.4 The render is to be applied in 2no coats to a minimum overall thickness of 19mm. Variations in the background are to be dubbed out in the same mix as the first coat.

5.5 Apply the first coat (scratch coat). Two 6mm skins are recommended in rapid succession. The first coat should be left to stiffen then floated over the whole area. Cross scratch the surface using a suitable comb immediately after set.

5.6 Allow 24 hours for hardening in warm conditions or several days in cold conditions.

5.7 Once the first coat has hardened apply the second 7mm coat. A fine spray of water is recommended between the coats.

5.8 Apply each render coating firmly to achieve good adhesion and in one continuous operation between all angles, joints and edges. All coatings to be no less than the thickness specified, firmly bonded, of even and consistent appearance, free from rippling, hollows, ridges, cracks and crazing.

5.9 The render is to be a cement:lime:sand render, mix proportions 1:1:6, composition as follows:

- Cement: OPC/White Portland/Masonry according to selected sample mixes and panels. All cements must comply with the appropriate British Standard and be licensed under the BSI Kitemark scheme for cement.
- Lime: Lime putty to BS 890.
- Sand: Natural sands/aggregates to provide natural colour and texture according to selected sample mixes and panels.

5.10 Alternatively subject to availability and satisfactory samples panels being prepared a proprietary ready mixed lime:sand mortar mix to BS EN 998-1:2010 may be used.

5.11 The render is to be trowelled flush and finished with a dry cross grained wood float as soon as the wet sheen has disappeared from the surface to give an overall texture. Work in shade whenever possible. Allow each coat to dry out thoroughly to ensure that drying shrinkage is substantially complete before applying the next coat. Keep each undercoat and the final coat damp for the first three days by covering with polythene sheet and/or spraying with water. Upon completion protect the rendered areas so as to prevent excessively rapid or localised drying out.

6.0 Slate Roofing

6.1 Slates that have been stripped from the roof that are considered to have potential for re-use are to be assessed in accordance with BRE guidance notes to determine slates in sound condition for re-use. All unsound or dilapidated slates are to be removed from site.

6.2 Additional imported second-hand slates are to match the existing salvaged slates as closely as possible in terms of colour, size, thickness and appearance.

6.3 All slates are to be centre fixed with 30mm x 3.35mm 10 gauge copper clout nails to 50mm x 25mm treated SW roofing battens with a minimum 15mm embedment into the battens. The battens are to be fixed to rafters with 65mm x 3.75mm stainless steel annular ring shank nails. Slating battens are to be laid on top of a breathable non-woven polyester geotextile felt underlay, weight not less than 210g/m2, (Tyvek or equal approved). The underlay is to be fixed with 20mm x 3.35mm extra-long 11mm diameter head copper nails laid directly over the rafters with minimum 150mm horizontal laps and 100mm vertical laps coincident with supports.

6.4 Use slates of consistent thickness in any one course laid with the thicker end as the tail. Use extra wide slates generally at the end of courses to maintain bond and ensure that cut slates are as large as possible. Feather the edges of newly cut slates to match existing. Carefully set out the slates to give true lines and a regular appearance with a neat fit at all edges, junctions and features.

6.5 Roofing battens are to be sawn softwood, species in accordance with BS 5534, Clause 4.11.1, with permissible characteristics and defects not to exceed the limits in BS 5534, Annex D. Battens to be supplied preservative treated as Wood Protection Association Commodity Specification C8, type of preservative to be Organic Solvent (OS) with a desired service life of 40 years. Joints in battens to be square cut, butted centrally on supports and must not occur more than once in any group of four battens on any one support. Battens should not exceed 22% moisture content at time of fixing.

6.6 Ridges and hips are to be finished with reclaimed clay capped angle ridge tiles selected with a range of appropriate angles to suit all the roof pitches. If the existing ridge tiles are unsuitable for re-use and appropriate second-hand reclaimed ridge tiles cannot be obtained then new matching ridge tiles are to be installed.

6.7 The ridge and hip tiles are to be mortar bedded and mechanically fixed to comply with BS 5534, clause 6.4.3.

6.8 Build-up 38 x 25mm tiling battens at ridges to a height to give at least a minimum 15mm penetration of 100 x 4mm wood screws into ridge batten.

6.9 Build-up 38 x 25mm or 50 x 25mm tiling battens at hips to a height such that at least 15mm penetration of wood screws into the hip batten is achieved when the hip tiles are screwed down to the slates and tiles either side of the hip

6.10 Position the ridge / hip batten along the centreline of the apex. Secure the ridge batten with stainless steel batten straps to the rafters using two 30 x 2.65mm annular ring shank nails.

6.11 Cover the ridge / hip batten with underlay, lap a minimum of 150mm with the underlay on the roof slopes and fix with the top tiling batten to both roof slopes.

6.12 Lay the ridge / hip tiles on a bed of mortar, continuous to edges and solid to joints.

6.13 Mechanically fix all ridge / hip tiles with stainless steel woodscrews and stainless steel clamping plates either embedded into the mortar joint between the tiles or inserted through a pre-drilled hole in the centre of the ridge tile.

6.14 For end ridge or hip tiles secure with stainless steel clamping plate and stainless steel woodscrew through a pre-drilled hole 100mm from the end. All fixings are to be sealed with neoprene washers and grommets.

6.15 The verge detail to gable walls is to be a mortar bedded verge with a bedded slate undercloak. The underlay is to be carried on to the top of the masonry wall to within 50mm of the outer face and bedded on mortar. The slate undercloak is to be positioned over the underlay level with the underside of the slating battens and sloping towards the verge. The undercloak is to be bedded on mortar and to project between 38mm and 50mm beyond the face of the wall. The slating battens are to be carried on to the undercloak and finish 100mm from the verge edge. The verge slates are to finish flush with the edge of the undercloak and are to be bedded on a 75mm wide bed of mortar. The mortar pointing to the verge is to be finished with a flush profile.

7.0 Leadwork

7.1 Tapered valley and box gutter linings

7.1.1 Substrate to be preservative treated Baltic Whitewood to BS EN 942: 1996, Class: J10, free from decay, insect attack (except ambrosia beetle damage) and wane. The preservative treatment to be water based micro-emulsion to Wood Protection Association Commodity Specification C8.

7.1.2 The substrate is to be boards 100mm wide x 25mm thick, square edged, and planed all round. The moisture content at the time of fixing is to be not more than 19%. The substrate is to be supported on preservative treated softwood gutter bearers and fixed with 2 x 50 mm galvanised lost head nails to each gutter bearer.

7.1.3 The substrate is to be overlaid with building paper underlay conforming to BS 1521 Class A.

7.1.4 The lead is to be rolled lead, to BS EN 12588, 2.65mm thick, (Code 6) with a maximum overall girth of 850mm and a maximum spacing between drips of 2250mm.

7.1.5 Joints in direction of fall to be wood cored rolls with splashlaps 45 x 45 mm round tapering to a flat base 25mm wide fixed to substrate with brass or stainless steel countersunk screws at not more than 300 mm centres. The undercloak is to be dressed three quarters around core and fixed to the core with nails at 150mm centres for one third length of the sheet starting from the head. The overcloak is to be dressed around the core and extended on to main surface to form a 40mm splash lap.

7.1.6 Dress lead gutter lining min 100mm into hopper or discharge via a lead chute outlet to a cast iron external hopper head and downpipe to match the existing situation.

7.2 Pitched valley gutter linings

7.2.1 The lead valley gutter shall be a minimum width of 125mm between the slates.

7.2.2 The lead gutter lining shall be underlain with building paper conforming to BS 1521 Class A.

7.2.3 The lead is to be rolled lead, to BS EN 12588, 2.24mm thick, (Code 5) with a maximum overall girth of 800mm and a maximum length of 1500mm.

7.2.4 The lead gutter lining is to be laid over and beyond the timber tilting fillets and finished with welted edges. Cross joints are to be lapped not less than 200mm. The top edge of each sheet shall be fixed with 2no. copper or stainless steel nails and the bottom end of the sheet shall be dressed neatly into the eaves gutter or box gutter according to situation.

8.0 Rainwater Goods

8.1 Eaves gutters are to be new cast iron with the type and size to match the existing. The gutters are to be supported on existing retained or new iron or galvanised steel gutter brackets fixed into the masonry.

8.2 Outlets are to be either eaves gutter outlets or decorative flat back hopper heads with spigot outlets according to the existing situation with the type and size to match the existing.

8.3 Downpipes are to be round spigotted cast iron rainwater pipes with the type and size to match the existing and with ear brackets integral with the pipes. Shoes are to be cast iron anti-splash shoes with ears.

8.4 All the rainwater goods are to be cast iron to BS 460.

8.5 The pipes and hopper heads are to be fixed to masonry with stainless steel screw fixings and oak bobbins to pack the brackets off the wall.

8.6 Downpipes are to be clipped as necessary at all joint positions and so as to provide a loadbearing support for vertical pipes at not less than every storey level.

8.7 The downpipes are to be connected to the existing underground drainage system and include a removable access/cover plate for rodding immediately above ground level.

8.8 The joints in pipes are to be fixed with lead wedges to the sockets and sealed with cold caulking compound to the manufacturer's instructions.

8.9 All fittings are to be supplied primed for painting on site. Ensure all surfaces that will be concealed or inaccessible - rear, sides etc., are fully painted prior to fitting.

8.10 Provide purpose made stainless steel leaf guards to all hoppers and outlets.

8.11 Make good any damage to primer with matching compatible metal primer. Apply one coat of oil based undercoat and two coats alkyd gloss finish; Colour: Black.