STONEWORK REPAIR AND POINTING

1.0 GENERAL
Where stone repairs are specified, an assessment will be made on site as to the most appropriate method using the joint experience and expertise of the stone mason and architect.
1. Stone should only be replaced or repaired where identified by the architect and any further stonework thought to require replacement and not shown on the drawings, should be marked up with chalk to allow for further inspection. The contractor must check with the architect if the drawings / instructions are not clear.
2. Stone should only be replaced or repaired where identified by the architect and any further stonework thought to require replacement and not shown on the drawings, should be marked up with chalk to allow for further inspection. The contractor must check with the architect if the drawings / instructions are not clear.

2.0 REPLACING STONE
The type of stone for use in replacements is to be confirmed by the architect following comparison of samples on site. For this purpose the contractor should provide samples of potentially suitable limestone for comparison and selection on site.
Cut out defective stone completely or to a minimum depth of 100mm (or depth to match width / height if less) , using hand tools and diamond disc cutters to minimise vibration; and taking care to avoid damage to arrises and surfaces of adjacent stonework
Provide support as necessary
Fix new stone as specified, worked and finished to conform with existing detail, bedded with lime mortar
Grout and point up with lime mortar finished to slightly reveal arrises keeping the work clean to prevent staining Replacement stonework shall have a rock-faced surface to match existing stonework. All surface finishing shall be of the same pitch to match existing adjacent stonework. All surface finishing shall be done by hand tools only.

3.0 INDENTED REPAIR
Carefully cut out defective area of stone to minimum depth of 100mm (or depth to match width / height if less), to vertical and horizontal joints, square to the face and with sharp arrises Use light hand tools or, with prior approval, disc cutters to minimise vibration.
Cut new stone sawn square to provide joint width no greater than 2mm, worked and finished to conform with existing detail.
Replacement stonework shall have a rock-faced surface to match existing stonework. All tooling shall run in the same direction and be of the same pitch to match existing adjacent stonework. All rustication shall be done by hand tools only.
Fix stone into position with minimum 5mm diameter stainless steel threaded pins secured in annulus of polyester or epoxy resin. Avoid getting resin on adjacent stone faces.
Point up with lime mortar finished flush with the face. Mortar colour to match stone as closely as possible.

4.0 LIME MORTAR REPAIRS
Prepare samples of mortar to match the various conditions of weathering and various stone core colours on a piece of stone or tile to be judged on its wet and dry appearance. If using proprietary mix, please follow manufacturer's instructions.
- Cut out the decayed areas (or previous poor mortar repairs) undercutting the edges to provide key
- Wash out the cavity.
- Saturate the cavity with lime rich water from the top of the coarse stuff curing bin to prevent dewatering of the repair mortar
- Pre-wet the stone using industrial methylated spirits to enhance capillary attraction
- Place the repair mortar compacting in layers not exceeding 10mm in thickness in any one application and having no feather edges
- Allow each layer to dry out before rewetting and placing the next
- For cavities exceeding 12mm in depth and extending over 50mm square surface area, drill holes to take non- ferrous or stainless steel reinforcement and set in epoxy mortar; allowing cover for reinforcement
- Finish repair to the required profile using a wood or felt-covered float, or with a damp sponge or coarse cloth
- Follow joints or surface finishing in the original work, forming joints for later pointing if appropriate
- Protect repairs against frost, rain and direct sunlight for 1 month after completion and keep it moist with dampened hessian for a fortnight to ensure slow drying

5.0 PREPARING BEDS AND BACKINGS
Remove soft mortar by brushing, vacuuming or raking with chisel in preference to cutting with hammer and chisel.Cut out defective stones or parts of stones until structurally sound material is reached. Leave cavities cut square and take care not to damage adjacent stones or surfaces to be retained.Remove or cut out fully all stones, or parts of stones, to be replaced with new, prior to cutting and dressing replacement stone, to ensure that new stone exactly matches the void into which it is to be set.Remove all unwanted remaining bedding and backing material, fixings and similar items from voids left where defective stones have been cut out and/or where stones are missing. Rake and clean out cavities to provide sound, hard surfaces for replacement stones/tiles. Remove dust throughout with a vacuum cleaner.Treat voids with biocide if instructed.

6.0 REPAIRS TO EXISTING STONEWORK Take great care when reconstructing stonework to save as much as possible of the original fabric and to retain the character of the masonry. In particular, strictly maintain the existing pattern of jointing.Take extreme care not to disturb, move or damage any masonry however humble, unless instructed otherwise.Where stones are to be removed keep area of removal to minimum. Remove stones in their entirety, irrespective of size, unless instructed otherwise.Set stones for re-use aside with care and mark them as necessary on unexposed faces to ensure their replacement on their proper beds and in their proper locations.Use manual tools only. Power tools will not be permitted.Notify the Architect of any signs of structural movement found within the walls when stones have been cut out.

7.0 CUTTING OUT FOR PIECING IN Where possible ascertain depth of the stone to be repaired. If practical remove stone to a depth of 100mm.If the stone is less thick than 50 mm or the material that would be left would be unstable, seek instruction.Cut out defective section to a square or rectangular profile.

8.0 BASIC WORKMANSHIP
Comply with the clauses of the following that are relevant to this section, unless otherwise specified or shown on drawings:BS EN 1996, parts 1-3; 2005 and 2006, and PD 6697:2010.

9.0 MASONRY ADHESIVES For fixing small sections of stone in 'dentistry' repairs use 'Akemi' resin/epoxy-based adhesive from Ebor Equipment Limited, Trans-Pennine Trading Estate, Gorrells Way, Rochdale, Lancashire OL11 2PX. Tel. 01706 869691, or other approved.For piecing-in larger stones use Certite from SBD Ltd. Dickens House, Enterprise Way, Flitwick, Bedford MK45 5BY, Tel. 01525 722 100, or other approved, in conjunction with metal fixings where specified

10.0 METAL DOWELS, FIXINGS AND WALL TIES
Copper or stainless steel as defined in Table 1 of BS 5390.

11.0 LAYING AND JOINTING
Start stonework not less than 150mm below finished level of external paving or soil, except where shown otherwise.Keep stonework 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 marks or stains will not be permitted.Set mechanical fixings in mortar Dampen stones and well wet existing stonework and lay stones on a full even bed of mortar with all joints filled.Maintain joint lines as existing, unless otherwise instructed.
12.0 MECHANICAL FIXINGS
Bed cramps, dowels and other fixings in 1:3 NHL 3.5 hydraulic lime:sand mortar.

13.0 PINNING ERODED LOOSENED STONES FOR STABILITY
Carefully drill through face at approximately 300mm to horizontal, to diameter instructed, ensuring drilling has penetrated background, solid stone or stable core to minimum depth of 100mm.Remove debris from hole by blowing out with tubing and flush out hole with clean water from a syringe.Attach tubing to syringe and fill with resin prior to filling hole.Cut to length threaded austenitic stainless steel rod. Allow 6mm cover to face for small diameter rod, 12mm for large rod.Fill hole with resin to correct depth to avoid overfilling: e.g. 6mm diameter hole to take 3mm diameter rod hole to be resin filled to two thirds depth.Place protective plastic film and modelling clay plug below hole.Carefully insert dowel into resin filled hole by gently turning and pushing.Allow resin to cure to Manufacturer's recommended timings.Following curing, point hole in matching mortar.

14.0 STITCHING ACROSS MAJOR CRACKS
Where instructed and as directed specifically by the CA. All be carried out with utmost care: Remove stones as instructed for a distance of a minimum of 900 mm across the crack. Clean stones, mark and set aside for possible re-use.Do not adjust adjacent sound stonework to accommodate new stone unless instructed to do so.Using removed stone or matching stone salvaged from elsewhere, fill each pocket with pieces of stone at least 200 mm long.Ensure vertical joints are between 15 mm and 25 mm wide and that the crack line is covered by a stones placed centrally across it.

15.0 RE-SETTING LOOSENED OR DROPPED STONES TO ARCHES
Cut out and remove as much as possible of the mortar joint at the head of the stone. Gently but firmly push stone upwards and remove as much as possible of the mortar to the two side joints.Allow stone to drop a little and pack head joint with 1:3 NHL 3.5 hydraulic lime:mortar:sand mix, pushing as much mortar as possible to the back face of the stone.Lift stone so that its underside is flush with the arch soffit and tamp it to consolidate mortar and push mortar forward. Ensure finished joints are fully filled.(Simultaneously with the above): while lifting the stone, pack the side joints with 1:3 NHL 3.5 hydraulic lime:sand mortar mix.Firmly pack the side joints with slate set at least 12mm behind the finished mortar face. Finish all visible joints.

16.0 PREPARATION FOR MORTAR REPAIRS
Cut back damaged stone to firm base and minimum depth of 25mm, in ashlar preferably in regular shape parallel to original coursing.Undercut head and sides of small areas to provide key.Reinforce where necessary with 3mm diameter austenitic stainless steel or non-ferrous wire, resin anchored.

17.0 APPLYING MORTAR
Brush out or vacuum clean cavity to remove all dust and either wet to reduce suction or prime with bonding agent.Press mortar firmly into cavity and around reinforcement and finish surface slightly rougher than surrounding stone with a wood float.Apply the mix in two coats scratching the first to receive the second.Where tile reinforcements are to be used, leave them projecting 5mm to key the final coat. Roughen surface after initial set with bristle brush or scrim to remove laitance.Do not form feather edges.Keep plastic repairs moist for three to four days after completion.Repair each stone individually.Do not take plastic repair or reinforcement across joint. Point joint after plastic repairs have set as later separate operation.

18.0 GROUTING PROCESS Do not use grouting as a substitute for any necessary making good of the wall core.Do not carry out any grouting until the making good of masonry to the outer surface of the areas is complete, and until the approval of the CA has been obtained.All grouting is to take place in the presence of the CA or the Clerk of Works.Hand grouting may be used for small isolated voids and for fine cracks or fissures using a syringe, in association with tamping and pointing.Grouting should generally be undertaken by gravity feed, using a watering can and funnels. Grouting may only be undertaken with a hand pump after receipt of the CA's written approval.Mechanical pump grouting will not be permitted.When grouting by gravity using funnels, ensure that each area of wall receives suitable and sufficient quantities of grout and that no cavities are left.If grouting is undertaken using a hand pump with hose and nozzles, a fully working pressure gauge must be located on the pump at all times. Great care is to be taken to ensure that no masonry is disturbed or caused to bulge during grouting. Grout must never be pumped at a pressure exceeding 20 lbs per square inch (140 kPa).If masonry is disturbed in any way during grouting, the operation is to cease immediately.If the CA is not present, he is to be informed of the situation at once and asked for further instructions.

19.0 PREPARATION OF FINE JOINTS IN DRESSED STONES
Gently work a fine hacksaw blade along joints and remove loose material to a minimum depth of 13mm

20.0 REPOINTING PROCESS
Begin from top of wall. Immediately before re-pointing flush out joints with water to remove all dust and to control suction. Wet surface until it remains wet.
While damp fill joint with specified mortar.Thoroughly compact mortar to fill all voids and to ensure it adheres firmly to each side of joint. Iron mortar in with appropriate pointing tool (not trowel) of width to suit joint width, keeping finished mortar face back from damaged and weathered arrises and to width of original joint.Allow sufficient time for the re-pointing to be done without hurry.

CONDITION 3 DISCHARGE APPLICATION DRAWING

INTERNAL JOINERY AND DECORATION
Any external joinery shall be primed with a two coat gloss finish.
Internal wall finishes to be 2 coats of emulsion - colours as instructed.
Internal woodwork - prepare, prime and paint on undercoat and one gloss coat.
Adhesives shall comply with BS.1204.
All rendering to be in accordance with BS 5262.
All timber shall be well seasoned, bright, sound, cut square and straight grained and shall be free from discoloured sap wood, wane, shakes, dry, loose or dead knots, or any other defects which will render it unsuitable for it's intended use.
Timber for carpenters work shall be in accordance with BS4978, BS4471 and CP112.
The timber for structural use shall be graded in accordance with BS4978.
Timber for joiners work shall be in accordance with BS1186 part 1 class ls for hardwood and clear finished softwood, and class 2 for softwood which is not concealed.
Timber shall be used in accordance with the uses permitted in tables a & b.
Timber for flooring shall be graded and sized in accordance with BS1297 and shall be in accordance with CP201 part 2.
Plasterboard backings shall be not less than 9mm thick generally with galvanised clout nails and the joints between boards covered with jute scrim.
Where board joints occur, additional timber noggins shall be provided for fixing if required, so that boards are fixed on all 4 edges.
All loose plaster to solid or metal lathing backings shall be cut back and the surfaces to be plastered as required.
All surfaces shall be thoroughly brushed down and wetted before plastering.
Allow for dubbing out in cement and sand as found necessary in order to finish new plaster surfaces level with the existing.
The workmanship generally shall comply to the requirements of BS1186 part 2 and CP112.
Where nails are used for fixing softwood, the nails are to be punched in.
All screws are to be counter sunk.
Screws for fixing hardwood are to be either sunk or pelleted or if exposed are to be brass.
Screws for fixing ironmongery to be matching.
Plugging for fixing timbers shall be at 400mm centres unless otherwise described.
Skirtings and the like shall be in single length wherever possible and jointed with splayed heading joints otherwise. broken or damaged members which cannot be repaired by filling and separating shall be cut out and new sections of timber let in, glued and pinned and shaped or moulded to match the existing members.

FULL FILL CAVITY WALL
To achieve minimum U Value of 0.18 W/m²K
New cavity wall to comprise of coursed limesone rubble walling . Full fill the cavity with 150mm Dritherm 32 insulation as manufacturer's details. Inner leaf constructed using 100mm lightweight block, 0.15 W/m²K, e.g. Celcon solar, Thermalite turbo. Internal finish to be 12.5mm plasterboard on dabs plus skim OR with Ames taped joints.
S/S Rawltie Type HRT4/225 at 900mm centres horizontally, 450mm centres vertically, staggered with extra at 225mm centres, at reveals.
Cavity ties at 225mm vertical centres within 225mm of opening closers. Close reveals with
Damcore insulated vertical DPC in accordance with manufacturer specification. Window frame to be set back to overlap Damcore by 30mm.
All brickwork and blockwork above dpc constructed with 1:6 Ready Mixed Mortar.
Blockwork to ground floor of full 3 storey units to be 7N/mm2
Plasterboard behind "wet" tiled areas i.e., within shower spray area to be moisture resisting
DPC (Hyload or similar approved) to each leaf set at 150mm min above ground level in outer leaf.
Suspended block and beam floor to sit on Hyload type damp proof course and that cavity will extend 225mm below this lowest damp proof course.
Maintain DPC at 150mm above ground level at entrance doorway. DPC cavity trays over external opening lintels with proprietary cavity weeps at 450mm max centres.
IG galvanised steel open-back insulated lintels, types L1/S 100 throughout and L1/HD 100 under attic trusses, with 150mm min. bearings over openings in cavity walling.
N.B. All facing brickwork to be pointed with a bucket handle finish unless otherwise specified on the approved drawings.
Mortar ;
Unless otherwise specified, use OPC (white if shown) and lime by Limbux. Unless otherwise specified by structural engineer, use mortar mix of 9 sand : 2 lime : 1 cement.
sand to BS 1200. Do not use admixtures unless approved by S.O. All materials are to be measured by using clean gauge boxes. Proportions are for dry sand - allow for bulking if the sand is damp.
Do not use after initial set has taken place, do not re-temper.
Adequately protect new walling against snow or rain by suitable covering when precipitation has begun and at completion of day's work.
Rake out and replace any mortar damaged by frost.
Bricks shall comply with BS 3921. sand to comply with BS 1200 table 1. water to be clean and free from any harmful matter.
All brickwork and blockwork shall be uniform, true and level, all perpends shall be vertical and in line. joints are to be solid - filled with mortar.
Bricks are to be laid frog uppermost. no masonry is to be laid when the temperature is below 2c.
DPC
Provide horizontal strip polymer (Hyload) damp proof course to both internal and external skins minimum 150mm above external ground level. New DPC to be made continuous with existing DPC's and with floor DPM. Vertical DPC to be installed at all reveals where cavity is closed.
CAVITIES
Provide cavity trays over openings. All cavities to be closed at eaves and around openings using Thermabate or similar non-combustible insulated cavity closers. Provide vertical DPCs around openings and abutments. All cavity trays must have 150mm upstands and suitable cavity weep holes (min 2) at max 900mm centres.

CAVITY BARRIERS
30 minute fire resistant cavity barriers to be provided around openings, at tops of walls, gable end walls, vertically at junctions with separating walls and horizontally at separating floors. Cavity trays to be provided over barrier where required. Trays and cavity barriers to be installed according to manufacturer's details.

STONEWORK GENERAL
Keep facework clean during construction and until practical completion. ensure that no mortar encroaches on face when laying. turn back scaffold boards at night and during heavy rain.
Rubbing to remove marks or stains is not permitted.
Facework to start nlt 150mm below fgl of paving or soil except where shown.
cut stone only where necessary at jambs, eaves and junctions.
Sample panel of stonework to be built for inspection/approval of planning officer is required.
The coursed stone rubble walling is to be formed using approved locally quarried limestone which is to be carefully graded by the mason into approximately five different bed depths. All bed and perp joints will be close and tightly formed throughout with simple pointing using a wire brush and rag.
Mortar ;
Use white OPC and lime by Limbux. unless otherwise specified by structural engineer, use mortar mix of 9 sand : 2 lime : 1 cement.
Sand to BS 1200. do not use admixtures unless approved by S.O. All materials are to be measured by using clean gauge boxes. proportions are for dry sand - allow for bulking if the sand is damp.
Do not use after initial set has taken place, do not re-temper.
Adequately protect new walling against snow or rain by suitable covering when precipitation has begun and at completion of days' work.
Rake out and replace any mortar damaged by frost.
NOTE : Any stonework laid below DPC level is to be FL quality.

LEAD WORK AND FLASHINGS
All lead flashings, any valleys or soakers to be Code 5 lead and laid according to Lead Development Association. Flashings to be provided to all jambs and below window openings with welded upstands. Joints to be lapped min 150mm and lead to be dressed 200mm under tiles, etc. All work to be undertaken in accordance with the Lead Development Association recommendations.
Lead sheet in lengths not exceeding 1500mm for flashings where roofs abut the external brickwork are to be provided. Combined step and cover flashing fixed in position with lead wedges min. 25mm horizontal joint.
Flashings to be continuous with trays min. 150mm above roof abutment and weepholes every 4tth perpend.

LEAD VALLEYS
Lead-lined valleys to be formed using Code 5 lead sheet. Valley lead and two tiling fillets to be supported on min 19mm thick and 225mm wide marine ply valley boards on either side of the rafters. Lead to be laid in lengths not exceeding 1.5m with min 150mm lap joints and be dressed 200mm under the tiles.
Roofing tiles to be bedded in mortar placed on a tile slip to prevent direct contact. Valley to have a minimum 100mm wide channel (125mm minimum for pitches below 30°).
All work to be in accordance with the roof cladding manufacturers and the Lead Development Association recommendations.

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LINTOLS
- For uniformly distributed loads and standard 2 storey domestic loadings only
Lintol widths are to be equal to wall thickness. All lintols over 750mm sized internal door openings to be 65mm deep pre-stressed concrete plank lintols. 150mm deep lintols are to be used for 900mm sized internal door openings. Lintols to have a minimum bearing of 150mm on each end. All pre-stressed concrete lintols to be designed and manufactured in accordance with BS EN 1992-1, with a concrete strength of 50 or 40 N/mm² and incorporating steel strands to BS 5896 to support loadings assessed to BS 5977 Part 1.
For other structural openings provide proprietary insulated steel lintols suitable for spans and loadings in compliance with Approved Document A and lintol manufacture standard tables. Stop ends, DPC trays and weep holes to be provided above all externally located lintols.
Independent lintols to have an insulated cavity closure between the inner and outer lintol. Common leaf lintol base plates should not be continuous and the lintel core should be insulated.

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Proposed Alterations and Extensions
at Mill Cottages, Mill Lane
Empingham LE15 8QE

Drawing Title : Construction Notes
Client : Mrs. R. Griffin
Date APRIL 2024
Scale NTS
Drawing No JDA/2024/20.2100.NOTES/001