

**49-59 OLD STREET
ISLINGTON, LONDON EC1V 9HX**

**STRUCTURAL SPECIFICATION FOR
BRICKWORK REPAIR**

Reference: 16367

16/10/2017



ISSUE STATUS

Issue No.	Date of issue	Details	Produced By	Checked by
01	16/10/2017	Structural Specification for Brickwork Repair	AB	LAM

Specification checked by Lachlan McDonald BSc CEng MICE MStructE

SPECIFICATION FOR BRICKWORK REPAIR**100. The Works:**

- 101 This specification is to be read in conjunction with the preliminaries and general conditions.
- 102 The specification applies to brickwork repairs to the walls shown on the structural elevation survey drawings and the extent of the works is to be agreed with the Architect.
- 103 General cleaning of the brickwork at the commencement of the remedial works, together with removal of graffiti and pattern staining due to overflows, algae etc. (non-structural) is included in this specification.

200. Conditions:

- 201 All methods of working, removal of defective materials and methods of repair must allow for continued occupation of the buildings by its tenants and leaseholders. In addition, measures are to be taken to avoid damage to all other surfaces, with particular reference to the adjacent new windows and doors. Such methods of working shall be specified prior to commencement of works together with any consequent temporary restrictions on access. Permanent access must be maintained always.
- 202 All materials and working practices are to be applied in accordance with manufacturers' current recommendations, agreement certificates and British Standards where applicable.
- 203. The Contractor shall inform the Architect of his proposed sequence of working at least 5 working days in advance of the works commencing on site. In some instances, due to for example, concrete repairs or other work, the Architect may direct that the brickwork repairs in an area be delayed until a later programmed date.
- 204. The Contractor shall report in writing on a weekly basis the precise areas in which he will be working and the nature of the works involved at least 5 working days in advance of their commencement.
- 205 The Contractor shall provide safe access to all areas to which this specification applies.
- 206. Scaffolding, if required, will be provided by the Main Contractor to all the main external walls.

300. Survey and recording:

The Contractor shall:

- 301 Use the structural survey drawings in Appendix B and photographs in Appendix A showing the defects on the elevations, including cracks, defective pointing, weathered bricks, loose or spalling mortar joints, loose or defective slip bricks.

- 302 The position and extent of all defects are to be agreed with the Engineer and recorded on the copy negatives provided as the work proceeds. These will constitute the record drawings. The Contractor is to provide weekly copies of the current record drawings for the duration of the contract.
- 303 The appropriate repair for each recorded defect is to be agreed with the Engineer and noted on the record drawings by the Contractor.
- 304 Areas of brickwork removed and subsequently rebuilt are to be agreed with the Engineer and recorded on the record drawings by the Contractor as work proceeds. The record drawings will be used to assess quantities of work completed during the contract and on completion.
- 304A At the commencement of the repair works, undertake opening up works at first floor level to check the existing brickwork and wall construction.

400. WORKMANSHIP

- 401 General:
- 402 During the course of the work protection is to be provided to all other surfaces. Any damage caused by the contractor, including the adverse effects of chemicals, will result in the contractor being held responsible for all necessary repair and replacement costs.
- 403 Working areas shall be adequately protected from the adverse influence of the elements.
- 404 All materials are to be stored on site in accordance with manufacturers' recommendations.
- 405 All materials to be installed in accordance with manufacturers' recommendations.
- 406 All equipment used in cutting joints is to be to the Engineer's approval.
- 407 Replacement of the existing by new bricks or facing, together with colour matching of the mortar, shall be subject to the Architect's approval. Brick samples are to be submitted to the Architect for approval prior to commencement.

500. Repairs:

- 501 Weathered bricks:
- 502 Only bricks that are failing are to be cut out and replaced with new ones or refaced in agreement with the Engineer.
503. The extent of the area to be removed and all requirements for supporting false work, joints etc. shall be agreed with the Engineer in 302 above.
- 504 Cut out and stitch repair all cracks and broken bricks with minimum 20 N/mm² bricks set in 1:1:6 cement: lime: sand mortar. Bricks and mortar to closely match existing and new bricks subject to Architect's approval.

- 505 Helifix Brickwork Repairs
Install 6.0mm diameter helical stainless steel HeliBar rods by Helifix into bed joints across cracks in the walls. Helibar rods are to be installed at 300mm centres vertically (4 No. courses of brickwork) and are to be extended horizontally at least 500mm on either side of the crack. Where cracks are less than 500mm from a corner, at least 100mm should be bent round the corner and bonded into the return wall or bent and fixed. Prepare bed-joints in strict compliance with guidance published by Helifix in their Product Sheets in Appendix C. Only materials approved by HeliFix are to be used.
- 506 Unless specified otherwise, pinning-up to the underside of the existing brickwork shall be dry-packed using minimal water in 1:1:6 mortar and containing an approved expanding agent to within 20mm of the face. Re-pointing is to match the existing work as specified in 504 above.
- 507 Existing brick bonds are to be matched and junctions between new and old work are to be toothed or, where specified by the Architect, tied with straight joints. Block bonding is not permitted.
- 508 Exposure of any bed joint reinforcement (brickforce) is to be recorded as in (301) above. All other reinforcement is to be reported to the Engineer when it becomes visible.
- 509 Resin Repair of cracks of 2-10mm wide using Helifix CrackBond TE or similar approved product, colour to match existing. Installation to the manufacturer's specification to fully bond masonry. Makegood any holes or voids after the resin has been allowed to cure.
- 510 Remove all corroded wall ties and install Helifix RetroTie or similar approved; installation to manufacturer's instructions.
- 511 Internally in the stair cores, carefully hack off all loose render along cracks and hollow un-bonded render to expose the brickwork/ blockwork as well as the extent of crack in the walls and carry out crack repairs as specified in sections 505/509 above.
- 522 On completion of the repairs to the rendered walls internally, apply two coats of render using 1:4-5 cement:sand render or similar approved; undercoat thickness 8-12mm and a final coat applied to match existing. Prepare rendered surface for redecoration.
- 600 Re-pointing:**
- 601 Only pointing of bed joints or perps that are actually failing are to be re-pointed in accordance to the elevation survey drawings with the approval of the Engineer.
- 602 Remove all loose, fibrous or un-bonded pointing. Rake out to 20mm depth minimum. Thoroughly clean removing all loose material. Moisten surrounding brickwork and joints just before re-pointing to prevent leeching. Re-point using the mortar designated in (504) above to match existing.
- 603 Where there is no existing pointing to match with, the pointing profile shall be to the Architect's approval.

700. Joints:

- 701 Any existing joints (Movement, Contraction or Pointing in flashings) that have become damaged or degraded by age shall be replaced in line with 703 below and 300 above.
- 702 Any new movement joints specified, are to be cut with a tracked diamond saw, or similar approved, to ensure a perpendicular cut. New movement joints in brickwork are to be at maximum 12.0m centres and constructed as per Helifix Product Sheet PS/MJ01 (Appendix C) or similar approved product.
- 703 The joint shall be filled using "Aerofil" and sealed using "Vertiseal polysulphide" by Grace Servicised Ltd, or similar approved. Internally, a cover strip is to be provided to the Architect's detail. Horizontal joints are to be provided with Slipstrip 2 by Servicised Ltd OSA. Preparation and fixing to be as specified by the supplier.
- 704 The introduction of any new joints specified by the Engineer may in some instances require the inclusion of "Ancon PPS Wall Ties with Debonding Sleeves" at 450 mm vertical centers, or similar approved.

800 Slip Brick Replacement (Provisional):

- 801 All existing loose, broken and defective brick-slips (to be confirmed on site) shall be replaced to match the existing, to the satisfaction of the Architect/ CA, using both Roncrete pre-mixed 'Ronabond' and Ancon "Slip-brick Ties, or similar approved. The brick-slips are to be replaced on sound concrete only and not on repaired concrete. No replacement is to be carried out on repaired concrete. Refer to drawings 14762/SK20 & 21 for Slip-Brick Repair details (Appendix B).
- 802 Before fixing ties, the substrate material shall be cleaned off to suit the bonding agent manufacturer's specification.
- 803 Great care is to be taken to provide an even horizontal alignment for the finished work, particularly above openings. To achieve this, where operatives have limited previous experience, it may be necessary for the contractor to invite a manufacturer's Q.A advisor to site.
- 804 In some instances, it may be necessary to provide a compressible horizontal joint to the slip bricks as directed by the Architect.

900 Stained Brick Cleaning (Non-structural):

- 901 All stained brickwork as marked up on the Survey drawings (Appendix B) shall be cleaned to match the existing, to the satisfaction of the Architect/ CA, without causing any structural damage to the building.
- 902 Before commencing any cleaning operation, the contractor must identify the type of stain or deposit and the nature of the material to be cleaned in order to use the appropriate cleaning technique. The application of inappropriate cleaning agents can create further, more permanent colouration, which can be extremely difficult to remove.

- 903 The cleaning of stained brickwork is to be undertaken by a specialist contractor with previous experience for such work. There are several proprietary cleaning agents now available, generally based on hydrochloric acid and the manufacturer's recommendations must be followed by the contractor.
- 904 Cleaning should not be carried out in frosty conditions unless adequate measures are taken to protect the wet brickwork from becoming frozen.
- 905 Removal of organic growths (Algae, Lichens, Moulds etc.) to be carried out by the application of algaecide to kill growths, followed by steam cleaning. The application of biocide will help slow down any re-growth and reference should be made to the BRE Digests No. 370 and 418.
- 906 Removal of Paint and graffiti on the brickwork should be carried out using water-soluble paint removers to BS 3761 and should be used in accordance with manufacturer's instructions. This work should be carried out specialist contractor. When using paint removers, the contractor is to take the necessary measures to prevent the rinsing waste from entering the drains.

2.0 SCHEDULE OF WORKS FOR BRICKWORK REPAIRS

General.

The schedule of works should be read in conjunction with the Brickwork Repair Specification, photographs, sketches/drawings and the product information in Appendices A to C. The quantities stated in this schedule are provisional and are subject to confirmation by site measurements by the contractor.

The Contractor should note that the details on the sketches should be taken only as indicative of the scope of the works.

ITEM	DESCRIPTION	AMOUNT (£)
2.1	<p>Condition Survey</p> <p>Before the commencement of the repair works, undertake a visual survey of all the existing elevations of the building from the erected scaffolding, noting all the exposed brickwork defects based on the Structural Engineer's report. The defects are to be recorded in the elevation survey drawings provided by the Architects. Provide supplementary additional sketches for areas which are not covered by the Architect's drawings. Any specific features are to be recorded, so that they can be replicated.</p> <p>Internally, the communal stair cores are to be surveyed and all defects recorded.</p> <p>Copies of the photographs and drawings are to be submitted to the Contract Administrator (CA).</p>	
2.2	<p>Survey Documentation</p> <p>Provide reports for the surveys undertaken, including photographs and drawings for all the elevations.</p>	
2.3	<p>Surface Cleaning</p> <p>At the commencement of the remedial works, carry out general cleaning of the brickwork in accordance with Section 900 of the Specification for Brickwork. Remove any existing coatings, stains etc and fully expose any surface defects such as cracks, blowholes, etc. The required method of surface cleaning to be adopted by the contractor is to be agreed with the CA.</p> <p>Allow the Provisional surface Area of 5,000 m²</p> <p>(Rate for additional or reduction surface Area m²).</p>	

ITEM	DESCRIPTION	AMOUNT (£)
2.4	<p>Weathered Brick Repairs</p> <p>Carry out weathered repairs in accordance to Section 500 of the Specification for Brickwork Repair on all elevations.</p> <p>Allow for 250 No. Bricks per elevation</p> <p>(Rate for additional or reduction per 1No. brick).</p>	
2.5	<p>Resin Crack Repair (2-10mm cracks)</p> <p>For 2-10mm wide cracks in brickwork externally and internal blockwork, repair in accordance with Section 509 of the brickwork specification, colour to match existing. Internally, prepare all surfaces to receive decoration.</p> <p>Allow for 200m length per elevation</p> <p>Allow for 250m length for internal stair cores</p> <p>(Rate for additional or reduction per m length).</p>	
2.6	<p>Brick Stitch Repair</p> <p>Where the width of the crack in a joint is such that re-pointing exceeds 15mm a cut and stitch repair shall be carried out in accordance with Section 500 of the Brick Repair Specification</p> <p>Allow for 200 No. Bricks per elevation</p> <p>Allow for 150 No. Block internally for stair cores</p> <p>(Rate for additional or reduction per brick).</p>	
2.7	<p>HeliBar Stitch Repair</p> <p>This should be carried out by a 'Helifix' approved specialist contractor, or similar approved, in accordance with Section 505 of the Specification for Brickwork Repair.</p> <p>Allow the Provisional quantity of 250m HeliBar per elevation</p> <p>Allow the Provisional quantity of 50m HeliBar for stair cores.</p> <p>(Rate for each additional or reduction per m).</p>	

ITEM	DESCRIPTION	AMOUNT (£)
2.8	<p>Render removal for repairs (Internal Stair cores)</p> <p>Hack off defective render to walls and ceilings internally as per section 511.</p> <p>Allow the Provisional quantity of 300m² Area render</p> <p>(Rate for each additional or reduction per m²).</p>	
2.9	<p>Render – Internal stair cores</p> <p>Reinstate internal render in accordance with Section 522 of the Brickwork Repair Specification.</p> <p>Allow the Provisional quantity of 450m²</p> <p>(Rate for each additional or reduction per m²).</p>	
2.10	<p>Re-pointing</p> <p>Re-point brickwork in accordance with section 600 of the Specification for Brickwork Repairs to match existing.</p> <p>Allow the Provisional quantity of 500m² per elevation</p> <p>(Rate for each additional or reduction per m²).</p>	
2.11	<p>Wall Ties</p> <p>Supply and install resin and mechanical wall ties in accordance with the Specification for Brickwork Repair.</p> <p>Allow the Provisional quantity of 450Nr. per elevation</p> <p>(Rate for each additional or reduction per tie).</p>	
2.12	<p>Defective Joints</p> <p>Repair any existing defective/ degraded joints in accordance with section 700 of the Brickwork Repair Specification</p> <p>Allow the Provisional length of 250 m per elevation</p> <p>(Rate for additional or reduction per m length)</p>	
2.13	<p>New Joints</p> <p>Install new movement joints in accordance with Section 700 of the Brickwork Specification.</p> <p>Allow the Provisional length of 150 m per elevation</p> <p>(Rate for additional or reduction per m length)</p>	

ITEM	DESCRIPTION	
2.14	<p>Slip Brick Replacement (Provisional)</p> <p>Replace any existing defective brick-slips in accordance with section 800 of the Specification for Brickwork Repair to match existing.</p> <p>Allow the Provisional quantity of 200 slip bricks per elevation</p> <p>(Rate for each additional or reduction per brick).</p>	

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**SPECIFICATION FOR EXPOSED
CONCRETE REPAIR**

Reference: 16367

16/10/2017



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Issue No.	Date of issue	Details	Produced By	Checked by
01	15/10/2017	Specification for Exposed Concrete Repair	AB	LAM

Specification checked by Lachlan McDonald BSc CEng MICE MIStructE

SPECIFICATION FOR CONCRETE REPAIR

100. The Works:

105. This specification is to be read in conjunction with the preliminaries and general conditions prepared by the Architect.

The extent of the works includes all external reinforced concrete, including cill, lintels, walls, cantilever slabs and edge beam details. Refer to Ellis and Moore Drawings 16367/SK03-SK06 and photographs in Appendix A.

106. The extent of repairs to the concrete externally must be in agreement with the Architect's Requirements. The repair materials and methods of working are to be discussed and agreed with the Architects and the main contractor at the commencement of the proposed works.

200. Conditions:

205. All methods of working including cleaning, removal of defective materials and methods of repair must allow for continued occupation of the building by its residents. Such methods of working shall be specified at the time of tender together with any consequent temporary restrictions on access. Permanent access must be maintained at all times to all fire escapes and entrances.
210. All materials and working practices are to be applied in accordance with manufacturers' current recommendations, Agreement certificates and current British Standards where applicable.
220. The Contractor shall report in writing to the Contract Administrator, copy to the Clerk of Works, on a weekly basis the precise areas in which he will be working and the nature of the works involved at least 5 working days in advance of their commencement.
225. The Contractor shall provide safe access to all areas to which this specification applies.
230. Scaffolding will be provided by the Main Contractor to all the main external walls.

300. Survey and recording:

The Contractor shall:

305. Carry out a visual survey to detect all relevant defects based on the Structural Engineer's reports. Copies of the elevation drawings are available from the Architects for this purpose. These will need to be supplemented by the Contractor's own drawings for areas not covered by the Architect's drawings.
310. Conduct a cover meter survey to determine the location of all reinforcement and depth of cover to all reinforcement for edge beams, columns and slabs.
311. Determine, by the application of phenolphthalein on freshly fractured concrete, the depth of carbonation for edge beams and slabs. The number of tests are specified in the schedule of works.
312. By hammer test discover areas of unsound concrete.
320. The position and extent of all defects are to be agreed with the Engineer and marked on record drawings by the Contractor as the work proceeds. The record drawings will, after they are approved by the Clerk of Works, signed and dated by him, be used to assess

quantities of work completed during the contract and on completion. Please see also 305 above.

400. General Workmanship

- 405. All materials to be stored on site in accordance with manufacturer's recommendations.
- 410. All materials to be mixed and placed in accordance with manufacturer's recommendations.
- 415. All cementitious materials are to be mixed in a forced action or pan mixer. Eg. The 'Create Angle'.
- 420. All grit blasting equipment is to be closed-circuit and is to incorporate air, moisture and oil traps to prevent contamination of reinforcement and concrete surfaces.
- 425. All equipment used for removing defective concrete is to be subject to a satisfactory method statement approved by the Principal Designer (CDM). (In general, light, hand-held pneumatic breakers with pointed tools will be considered suitable).

500. Repairs Generally

- 505. It is recognized that the degree or extent of repair is related to both cost and the design life of the repair. With this in mind, the Tenderer is to tailor his proposals to a guarantee period of ten years. Appraisal of his tender will be judged based on "best value".
- 515. The extent of the area to be removed and all requirements for supporting false work, joints etc. shall be agreed with the Engineer in 320 above.
- 520. Colour matching repairs with existing surfaces is considered an important requirement to the contract. The Contractor will be asked to provide evidence of their ability to provide such a match by indicating previously executed jobs and providing sample panels for approval by the CA.
- 525. Acceptance of the colour matching for both the repair and also where anti-carbonation paints are to be used is to be to the approval of the CA.
- 535. All surface contaminants to unpainted concrete to be removed by power washing or as otherwise specified by the materials supplier.
- 540. All areas that have been previously painted to be removed back to the concrete substrate or as otherwise specified by the materials supplier. The most appropriate method (grit blasting, water blasting, wire brushing etc.) is to be used depending on the nature of the existing surface without causing any damage to the building.
- 545. Unsound, defective concrete is to be cut out to a minimum depth of 12mm.
- 550. Exposed reinforcement is to have a minimum cover of 25mm to the finished profile and concrete with a 25mm radius around the bar is to be cut away. If necessary reinforcement is to be bent back and additional concrete removed to satisfy the above criteria.
- 560. Each repair is to be delineated by a 12mm deep saw cut. Feathered edges will not be allowed.
- 565. The Contractor shall ensure that concrete at the base of the repair is alkaline in nature, by testing with a phenolphthalein solution. That is the carbonation test. See 311 above.

570. Reinforcement is to be exposed 100mm beyond its corroded length and the Contractor shall ensure that it is fully encased by alkaline concrete by testing with phenolphthalein solution.
575. Corroded reinforcement is to be grit-blasted to achieve clean bright surface. Where corrosion has reduced the diameter of the reinforcement by greater than 10% additional reinforcement is to be resin bonded to replace the corroded length. Treated reinforcement is to be sealed immediately and kept dry and clean prior to application of the repair mortars.
580. Immediately following on from cleaning, the reinforcement is to be treated with the specified primer.
585. Where working is not continuous EITHER apply a key comprising fine clean dry sand is to be applied to the reinforcement sealer while still tacky. Excess sand is to be removed prior to continuing the repair process- OR strictly follow the manufacturer's instructions or recommendations.
590. Repair surfaces are to be treated with the specified bonding agent prior to application of repair mortars.
592. The maximum thickness (in mm) of repair mortar to be applied in one layer varies with location as given below:

	Repair Mortar	Lightweight Repair Mortar
Horizontal	100	100
Soffit	20	75
Vertical	..20	75

594. Greater thicknesses may be used in isolated pockets or rebates subject to the product Manufacturer's approval. Where more than one layer is required surfaces shall be combed or scratched to provide adequate key and a further coat of bonding agent applied prior to application of subsequent coats. The final profile surface shall be trowelled off to a closed impermeable surface.
596. Greater thicknesses may be achieved using shuttering. However, the Contractors attention is drawn to the need to ensure the bonding agents remain tacky when the repair mortar is applied. If this option is adopted the Contractor's working method shall be subject to the Manufacturer's approval. The final profile surface shall be trowelled off to a closed impermeable surface.
598. The repair mortars are to be cured using a polythene curing membrane for a minimum of 24 hours between coats and for at least 4 days on the final profile.
599. The maximum length of repair that may be carried out at any one time is to be 600mm except for repairs to formed joints.

600 Anti-Carbonation Treatment

610. On completion of the remedial work all surface contaminants including cement laitance are to be removed.
615. All concrete surfaces are to be washed down thoroughly to remove all dust and allowed to dry for 3 days.

- 620 All concrete surfaces are to be stabilised with the sealer in accordance with manufacturer's recommendations and allowed to dry for 24 hours.
- 625 All concrete surfaces to be painted with elastic primer and paint allowing 24 hours between coats. Each coat to be pinhole free and applied in accordance with manufacturer's recommendations.
- 630 Exposed reinforcement is to have a minimum cover of 25mm. to the finished profile and concrete within a 25mm. radius around the bar is to be cut away. If necessary reinforcement is to be bent back and additional concrete removed to satisfy the above criteria.
- 635 Defective bars (corroded beyond repair) are to be reinforced by welding an additional mild steel bar of the same size to the areas unaffected by corrosion with 100mm lengths of 6mm fillet weld.

700. Joints:

710. Any existing joints (Movement, Contraction or Pointing in flashings) that have become damaged or degraded by age shall be replaced in line with 320 above.
- 715 Vertical movement joints are to be filled using "Aerofil" and sealed using "Vertiseal polysulphide" by Grace Serviced Ltd, or similar approved. Horizontal joints are to be provided with Slipstrip 2 by Serviced Ltd OSA. Preparation and fixing are to be as specified by the supplier.

800 Materials

- 810 Materials to be from one of the following manufacturers systems (or similar approved):
Weber (SBD) Ltd, Sika Ltd, Fosroc Expandite Ltd and Keim Mineral Paints Ltd
- 815 Steel Reinforcement Primer Weber (SBD) Epoxy Plus Bonding Aid
Sika Top 110 Armatec Epocem
Nitoprime Zincrich Plus
- 820 Concrete Bond Coat Webercem bondcoat
Sika Top121
Nitoprime HAR
- 825 Repair Mortar Webercem HB40 Structural Repair Mortar
Sika Top 122
Renderoc GP
Keim Concrete Repair mortar
- 830 Lightweight Mortar Webercem HB30 Lightweight Mortar
Sika Top 122 HB
Renderoc HB25
- 835 Fairing Coat Webercem fairing coat
Sikatop Seal 107
Renderoc RP252
Keim
- 840 Elastic Primer SBD Sealercoat
(1 coat application) Sika Icosit Elastic Primer
Nitoprime DG
- 845 Elastic Paint SBD Mulsicoat EC
(2 coat application to Deckguard elastic
min 400DFT

2.0 SCHEDULE OF WORKS FOR CONCRETE REPAIRS

General.

The quantities stated in this schedule are provisional and are subject to confirmation by site measurements. Refer to the Specifications and defect sketches appended to this schedule. The Contractor should note that the details on the sketches should be taken only as indicative of the scope of the works.

ITEM	DESCRIPTION	AMOUNT (£)
2.1	<p>Condition Survey</p> <p>Before the commencement of the repair works, undertake a visual survey of all the existing elevations of the building from the erected scaffolding, noting all the exposed concrete defects based on the Structural Engineer's report. The defects are to be recorded in the elevation survey drawings provided by the Architects. Provide supplementary additional sketches for areas which are not covered by the Architect's drawings. Any specific features are to be recorded, so that they can be replicated. Copies of the photographs and drawings are to be submitted to the Contract Administrator (CA).</p>	
2.2	<p>Cover meter survey</p> <p>Conduct a cover meter survey to determine the location of concrete reinforcement and the depth of concrete cover to the reinforcement for edge beams, columns and slabs.</p> <p>Allow 5No. Tests per elevation</p> <p>(Rate per additional or reduction test per elevation)</p>	
2.3	<p>Hammer Test</p> <p>Carry out hammer tapping of exposed concrete surfaces on all elevations to identify delaminated and unsound concrete. The tests are to be recorded for the concrete repairs.</p> <p>Allow the Provisional surface Area of 5,000 m²</p> <p>(Rate for additional or reduction surface per m²).</p>	
2.4	<p>Carbonation depth Test</p> <p>Determine the depth carbonation as specified in Section 311 of the concrete repair specification.</p> <p>Allow for 5No Tests per elevation</p> <p>(Rate for additional or reduction per test).</p>	

ITEM	DESCRIPTION	AMOUNT (£)
2.5	Other Testing Allow for additional testing as necessary	
2.6	Survey Documentation Provide reports in hardcopy and electronic form for the tests and surveys undertaken, including photographs and drawings for all the elevations.	
2.7	Surface Cleaning Clean exposed bare concrete surfaces (columns, walls, slab soffits etc.) to remove any existing coatings, cement latency or contaminants and fully expose any surface defects such as cracks, blowholes, etc. The required method of surface cleaning to be adopted by the contractor is to be agreed with the CA. Allow the Provisional surface Area of 250 m² (Rate for additional or reduction surface Area m ²).	
2.8	REPAIRS TO REINFORCED CONCRETE Remove defective concrete, prepare surfaces and, if applicable, the reinforcement, prime and reinstate as per Section 500 of the Specification Concrete repair.	
2.8.1	Exposed wall and column faces	
2.8.1.1	Depth not exceeding 25mm Allow the Provisional surface Area of 500 m² (Rate for additional or reduction per m ² surface Area)	
2.8.1.2	Depth exceeding 25mm but not 50mm Allow the Provisional surface Area of 450 m² (Rate for additional or reduction per m ² surface Area.)	
2.8.1.3	Depth exceeding 50mm Allow the Provisional surface Area of 550 m² (Rate for additional or reduction per m ² surface Area.)	
2.8.2	Exposed concrete slab soffits/ ceilings	

ITEM	DESCRIPTION	AMOUNT (£)
2.8.2.1	Depth not exceeding 25mm Allow the Provisional surface Area of 650 m² (Rate for additional or reduction per m ² surface Area).	
2.8.2.2	Depth exceeding 25mm but not 50mm Allow the Provisional surface Area of 500 m² (Rate for additional or reduction per m ² surface Area).	
2.8.2.3	Depth exceeding 50mm Allow the Provisional surface Area of 500 m² (Rate for additional or reduction per m ² surface Area).	
2.8.3	Sides and soffits of RC Beams and Lintels	
2.8.3.1	Depth not exceeding 25mm Allow the Provisional surface Area of 500 m² (Rate for additional or reduction per m ² surface Area).	
2.8.3.2	Depth exceeding 25mm but 50mm Allow the Provisional surface Area of 450 m² (Rate for additional or reduction per m ² surface Area).	
2.8.3.3	Depth exceeding 50mm Allow the Provisional surface Area of 500 m² (Rate for additional or reduction per m ² surface Area).	
2.8.4	Top surfaces of RC slabs	
2.8.4.1	Depth not exceeding 25mm Allow the Provisional surface Area of 550 m² (Rate for additional or reduction per m ² surface Area).	
1.8.4.2	Depth exceeding 25mm but not 50mm Allow the Provisional surface Area of 650 m² (Rate for additional or reduction per m ² surface Area)	

ITEM	DESCRIPTION	AMOUNT (£)
2.8.4.3	Depth exceeding 50mm Allow the Provisional surface Area of 450 m² (Rate for additional or reduction per m ² surface Area).	
2.8.5	ARRISES Extra over and above cost of repair to form arris to beam, column or slab. Allow the Provisional length 500 m per elevation (Rate for additional or reduction per m length)	
2.9	PORE/ BLOW HOLE FILLERS Undertake concrete repairs using the specified repair mortar in Section 500 of the Concrete Repair Specification, the finish is to match existing, unless otherwise agreed with the Contract Administrator (CA)	
2.9.1	Walls and Columns etc. Allow the Provisional surface Area of 400 m² (Rate for additional or reduction per m ² surface Area).	
2.9.2	Ceilings and Beams etc. Allow the Provisional surface Area of 450 m² (Rate for additional or reduction per m ² surface Area)	
2.9.3	Top of slabs etc. Allow the Provisional surface Area of 450 m² (Rate for additional or reduction per m ² surface Area)	
2.10	LEVELLING MORTARS/ FAIRING COATS Provide and apply anti-carbonation coating comprising of primer and finishing coats in accordance with Section 600 of the Concrete Repair specification to the manufacturer's recommendations.	
2.10.1	Walls, Columns etc. Allow the Provisional surface Area of 550 m² (Rate for additional or reduction per m ² surface Area).	

ITEM	DESCRIPTION	AMOUNT (£)
2.10.2	Ceilings, Beams etc. Allow the Provisional surface Area of 550 m² (Rate for additional or reduction per m ² surface Area)	
2.10.3	Top of Slabs etc Allow the Provisional surface Area of 500 m² Rate for additional or reduction per m ² surface Area	
2.11	SURFACE COATINGS AND TREATMENTS Provide surface coating and treatments in accordance with Section 600 of the Concrete Repair Specification	
2.11.1	Walls, Columns etc. Allow the Provisional surface Area of 1000 m² Rate for additional or reduction per m ² surface Area	
2.11.2	Ceilings, Beams etc. Allow the Provisional surface Area of 1500 m² Rate for additional or reduction per m ² surface Area	
2.11.3	Top of Slabs etc. Allow the Provisional surface Area of 1500 m² Rate for additional or reduction per m ² Area	
2.11.4	Defective Joints Repair any existing defective/ degraded joints in accordance with section 700 of the concrete repair Specification Allow the Provisional length of 250 m Rate for additional or reduction per m length	