Architecture. Conservation. Urban Design. Surveying

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India House, Whitworth Street, Manchester

For The Guiness Partnership Ref: 4545

OUTLINE ARCHITECTURAL SPECIFICATION

1. Scope

- The following is intended to provide a summary of the materials and products proposed to be incorporated into the works for the refurbishment of the India House and is to be read in conjunction with the full set of architectural drawings. This document is subject to development to a full Architectural specification at construction stage which will include the full requirement for workmanship and compliance with relevant Standards, with all products to be in accordance with Regulation 7 “Materials and Workmanship” of the Building Regulations.
- India House is a Grade II* listed building and of architectural importance therefore any repair and conservation work must be meticulously carried out must be in keeping with "best practice" and with the highest of standards of workmanship. The project scope is limited to localized areas of roof level elevational treatment, predominantly to the terracotta features and with associated interfaces with the adjacent roofing.
- The purpose of the repair and conservation work is to conserve existing sound masonry and pointing and any replacement or repairs are limited to defective masonry that is structurally unsound or that has decayed and may allow water ingress by compromising weathering details. Masonry that has been damaged by previous alteration or demolition work or been removed completely will be replaced to match the original design of the buildings.
- All works to be undertaken in accordance with the listed building consent and conditions thereof and to the satisfaction of the local planning authority and conservation officer.
- No loss of, or damage to, the historic fabric will be permitted without the express approval of the architect. Great care must therefore be taken when carrying out the work to ensure that adjacent sound areas of building fabric, including slating, leadwork, metalwork, glazing, joinerwork and sound masonry are not damaged whilst carrying out the repair work.
- The skill and experience of all site operatives must be appropriate for the types of work, in a heritage context, on which they are employed. Evidence of training and experience should be provided on request.

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RIBA Chartered Practice CHAS CfA ISO 14001 20/3430 CfA ISO 9001 20/3429

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2. Terracotta

- Detailed survey to be undertaken to confirm type and extent of repair/ renovation/ conservation work shown on drawings.
- Works in adverse weather conditions to be limited, with no frozen materials to be used of masonry units to be laid on frozen surfaces, or when the ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising, unless mortar has a minimum temperature of 4°C when laid and the masonry is adequately protected for cement gauged mortars. Or, if and where required, for hydraulic lime:sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising. Masonry to be protected by covering during precipitation (rain, snow and dew), and at all times when work is not proceeding. Works to be prevented from drying out rapidly during hot conditions or high winds. Where mortar is damaged by frost during the works this is to be raked out replaced.
- Existing fittings and fixtures to be removed so far as is required to complete the works, as indicated on drawings, and reinstated on completion of repair work. Removed items to be identified with attached labels or otherwise marked using durable, non-permanent means, to identify location and describe refixing instructions, where applicable. All temporarily removed fittings and fixtures to be stored on site until required and protected against damage, before being refitted in original locations using original installation methods. Masonry fabric and surfaces not to be damaged during removal and replacement of fittings/ fixtures.
- Plants, root systems and associated soil/ debris to be carefully removed from joints, voids and facework and where roots cannot be removed completely without disturbing masonry specialist advice is to be sought.
- Overstressing of masonry units during transit, storage, handling and fixing to be prevented. All units to be stored on level bearers clear of the ground, separated with resilient spacers, protected from adverse weather and kept dry. Soiling, chipping and contamination to be prevented, with units being lifted with designed lifting points, where provided.
- Damage to masonry units to be prevented, particularly to arrises, projecting features and delicate, friable surfaces. Mortar/ grout splashes and other staining and marking on facework to be prevented and protected with suitable nonstaining slats, boards, tarpaulins, etc., all of which is to be removed on completion of the work.
- Structural stability of masonry to be maintained throughout works, with any defects, including signs of movement that are exposed or become apparent during the removal of masonry units to be reported to the conservation architect.
- Retained masonry in the vicinity of all repair works not to be disturbed so far as possible. Existing retained masonry not to be cut or adjusted to accommodate new or reused units. Any retained loose masonry units and those which are vulnerable to movement during repair works are to be propped or wedged so as to be firmly and correctly positioned.
- Replacement terracotta blocks to be formed to BS EN 771-1, free from imperfections that will adversely affect durability and dimensioned to match of existing units within agreed manufacturing tolerances. Any required holes required for fixings to be accurately aligned and positioned. Colour, texture and finish (fireskin, glazed

or clay slip coat) to match retained existing adjacent to proposed location. Drain holes to be provide where there is any risk of water entering voids in exposed blocks in copings, cornices and projecting features, etc. Each unit to be marked clearly and indelibly on a concealed face to indicate position in the finished work.

- Voids in terracotta blocks to be filled with uncompacted, semidry, 1:1-2 bedding mortar : coarse aggregate mix, of uniform consistence.
- Replacement / Reinstated Terracotta units to be bedded and fully pointed to prevent moisture penetration, in mortar to BS EN 998-2 and in accordance with the composition analysis to match the original / existing mortar, where this is sufficient to accommodate anticipated movement and provides closely comparable moisture permeability to the existing mortar; (Refer to Mortar Analysis summary). one part NHL 5 Lime, 2 parts well graded sand & 10% Tras(potzolan). with well graded sand from 1.18mm sieve size down, refer to Mortar composition analysis for each location, noting this may not be consistent throughout the building.
- Where joints between replacement and retained blocks cannot be fully filled with bedding mortar, blocks to be thoroughly grouted, with grout kept back from exposed face and prevented from staining the exposed face. Grout mix with Nonhydraulic Lime with pozzolanic admixture, with t*ype and mix subject to* Mortar composition analysis for each location.
- Fixings for replacement Terracotta units to be of Aluminium (to European Standard indicated in BS EN 1090-3(or Steel (to European Standard indicated in BS EN 1090-2) or Austenitic stainless steel, and of sufficient size, strength and number to resist loads likely to occur during the life of the building, and to prevent lateral displacement or pulling apart of the construction.
- Bonded dowels for replacement terracotta units to be of aluminium (to European Standard indicated in BS EN 1090-3) or Austenitic stainless steel, formed to BS EN 1090-1, to be epoxy resin fitted in to holes suitably sized and accurately aligned in masonry background and in rear of replacement/ insert terracotta blocks; clean and dry, and should be clean and dry when installed. Adhesive not to be used at joints of terracotta blocks unless instructed by the conservation architect.
- Bed joint reinforcement to masonry, where required to replace existing reinforcement affected by repair works, to be of austenitic stainless steel, to BS EN 845-3 and approximately 40-50mm less in width than the wall or leaf to which it is installed. Bed joint reinforcement to be laid on an even bed of mortar in a continuous strip with 225 mm laps at joints and full laps at angles, kept back 20mm from face of external work or 12mm back from face of internal work and finish mortar joint to normal thickness.

3. Mortar Repairs

- Mortar repairs to be carried out in accordance with BS EN 998-2, with surfaces to be repaired to be clean, free from dust and debris and dampened to control suction. Mortar repair to be built up in layers to specified thickness, with mortar to be applied firmly, ensuring good adhesion with no voids. Mechanical key to be formed for undercoats by combing or scratching to produce evenly spaced lines. Each layer to be allowed to achieve an initial set before subsequent coats are applied. Each layer to be prevented from from drying out rapidly by covering immediately with plastics sheeting and/ or dampening intermittently with clean water.

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- Finish to mortar repair to be formed accurately to the required planes/ profiles and finished flush with adjacent masonry.
- Base coat(s) to be formed as finishing coat without stone (terracotta) dust, built up in layers not exceeding 12mm. Finishing coat to be coloured with stone (terracotta) dust to match terracotta block(s) being repaired, mixed in proportions determined by site trails and applied in layers of nominally 6mm and finished with scraped back or float finish to match existing retained terracotta blocks.
- For Scraped finish of mortar repairs, final coat of repair mortar to be finished proud of existing masonry face and scrape back to required face line using fine saw blade or other suitable means, when mortar is set, but not too hard, to achieve required finish. For float finish to mortar repairs; wood float and/ or a felt faced float to be used to give an even overall texture, steel floats are not to be used.
- Completed repairs to be protected from adverse weather until mortar has set.

4. Repointing

- Working from top of wall downwards, existing mortar to be carefully removed, without damaging adjacent masonry or widening joints, to a minimum depth of 30 mm. Where loose or friable mortar continues beyond this recessed depth, or if cavities are found, further instruction to be obtained from the conservation architect. Dust and debris to be removed from all raked joints.
- Mortar for all repointing, making good, repairs or reinstatement to be in accordance with the composition analysis to match the original / existing mortar, where this is sufficient to accommodate anticipated movement and provides closely comparable moisture permeability to the existing mortar; (Refer to Mortar Analysis summary). Mortar typically to be one part NHL 5 Lime, 2 parts well graded sand & 10% Tras(potzolan).
- Joints to be repointed with mortar pressed well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled, with joints to be neatly finished and recessed back from weathered arises to retain original joint widths. Face of masonry to be kept clear of mortar, and suitable temporary adhesive tape to be used on each side of joints where necessary.

5. Render

- Extent of removal and renewal of existing render is to be confirmed before work commences, that indicated on current drawings is a provisional at this stage, however extent of removal and renewal to be minimized so far as possible, but to include all detached, hollow, soft, friable, badly cracked, or render affected by efflorescence or otherwise damaged.
- Defective render to be cut out to regular rectangular areas with straight edges, with horizontal and vertical edges to be square cut or slightly undercut (except bottom edges to external render). Cracks to be cut out to a width of 75 mm (minimum), except fine hairline cracking or crazing which are to be left intact.
- Plaster affected by rising damp to be removed to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.

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- Faults in substrate (structural deficiencies, additional sources of damp, etc.): to be remedied in accordance with Conservation architects' instruction. Damp affected masonry substrates to be dried out so far are possible, by establishing drying conditions and leaving walls to dry for as long as possible before rendering.
- Dust and loose material to be removed from all exposed substrates and edges.
- Works in adverse weather conditions to be limited, with no render to be applied to frozen surfaces, or when the ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising, unless mortar has a minimum temperature of 4°C when laid and the masonry is adequately protected for cement gauged mortars. Or, if and where required, for hydraulic lime:sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising. Masonry to be protected by covering during precipitation (rain, snow and dew), and at all times when work is not proceeding. Works to be prevented from drying out rapidly during hot conditions or high winds. Air temperature of work to be maintained above freezing until render coatings have fully hardened.
- Render stop / angle beads to be fitted to all external angles and stop ends except where specified otherwise, manufactured from Stainless steel to BS EN 13658-2 and in accordance with BS EN 13914-1, Table 4. Beads to be fitted mechanically fixed, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate. Corners to be neatly mitred at return angles. Surplus coatings / materials to be surfaces of beads/ stops exposed to view, whilst still wet, once coatings have been applied.
- Render coatings to be applied firmly and in one continuous operation between angles and joints, achieving good adhesion and with an even and consistent appearance to finished surfaces, free from rippling, hollows, ridges, cracks and crazing. Final coat to be finished to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- Undercoat to be ruled to an even surface, combed to provide a key for the next coat, without penetrating the coat. Undercoats applied on metal lathing to be well worked into interstices to obtain maximum key.
- Plain floated finish final coat to have even, open textured finish free from laitance. Where required, scraped finish to be formed to expose aggregate and achieve an even texture.
- Each coat to be kept damp by covering with polyethylene sheet and/ or spraying with water to prevent premature setting and uneven drying of each coat, sheeting to be hung clear of final coat.
- Each coat to be allowed to dry thoroughly, with drying shrinkage substantially complete before applying next coat. Render to be protected from frost and rain.

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6. Slate

- Existing damaged or defective slates to be carefully removed and replaced with minimum disturbance of structure or adjacent retained slating, roof finishings, flahsings etc.
- Slates to be sourced to match existing length, width, thickness and colour so far as possible, and in accordance with BS EN 12326-1 and tested to BS EN 12326-2.
- Slating and accessories to be fixed to make the whole roof sound and weathertight at earliest opportunity. Slates to be set out to true lines and regular appearance, with neat fit at edges, junctions and features.
- Where existing battens / counter battens have been adversely affected by damp / water ingress, these to be cut-out and replaced with new sawn softwood battens, sized and profiled as the existing, in accordance with BS 5534, clause 4.11.1., and characteristics and defects not to exceed the limits in BS 5534, Annex D. Moisture content at time of fixing and covering to be no more than 22%.

7. Lead

- All workmanship to be in accordance with BS EN 14783 and BS EN 12588 and to BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Training Academy, to provide a secure, free draining and completely weathertight installation, undertaken by operatives trained in the application of lead coverings/ flashings.
- Leadwork to be formed straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks, fully supported and adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress. All sharp edges folded under or removed as work proceeds and solder used only where specifically specified.
- Lead sheet to be rolled to BS EN to BS EN 12588, or machine cast and BBA-certified, or sand cast, from lead free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes; to code thicknesses but with a tolerance (by weight) of ±10%.
- Existing substrates to be dry and free of dust, debris, grease and other deleterious matter with any boards adjusted to level and securely fixed, and protruding fasteners punched in and plane or sanded to achieve an even surface. Timber substrates to have a moisture content of not more than 22% at the time of covering.
- Lead to be fixed with:
    - Nails to timber substrate with copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1, of either annular ringed, helical threaded or serrated shank type and of not less 20 mm length or equal to substrate thickness and diameter not less than 2.65 mm for light duty or 3.35 mm for heavy duty.
    - Screws to concrete or masonry substrates to be brass or stainless steel, not less that 19mm length and not less than 3.35mm diameter. All washers and plastic plugs to be compatible with screws and lead and suitable for the substrate.

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