



WHITE CHAPEL

THE ART OF FINE PLASTER

WHITECHAPEL ART PLASTER SURVEY

**Piccadilly Warehouse, 11 Bloom Street &
Mindel House, Manchester**

Original Date

3rd September 2021

Revised Date

22nd September 2022

Client

Manchester Design & Build

Introduction

My name is John Bradshaw and I am a Chartered Builder (MCIOB), with forty years' experience, coming from a craft background, specialising in plasterwork, associated joinery, and structural repairs; on conservation and heritage work in traditional buildings. I am the managing director of Whitechapel Art Plaster Co Ltd. I have also worked extensively with operatives, managers, craftsmen and professionals, from other past and long standing, traditional; solid and ornamental plastering companies: such as Manchester Art Plasterers, who were based on New Bailey Street Salford, and Roberts from Didsbury. I have extensive past and contemporary experience, of lime plastering, ornamental in situ solid work, and fibrous plasterwork, along with associated joinery and structural repair works; in traditional buildings in Manchester, London, and other areas across the country. There is now, I have observed; a greater awareness, in the practice of conservation of listed buildings, and I like to embrace the innovation, knowledge, and ideas; which are exchanged, and discussed, between crafts people and professionals; in the contemporary conservation and heritage work place.

Client Instruction

Carry out a survey to accessible areas of the warehouse buildings to make observations and produce recommendations to cover the following five areas requiring inspection and remediation / replacement.

1. Identify heritage plaster from modern plaster and de-bonded heritage plaster.
2. Requirements of removing modern plaster and de-bonded heritage plaster.
3. Required replacement of solid plaster with new to satisfy heritage requirements.
4. Assess accessible existing lath and plaster and to identify required replacement / repair.
5. Prepare specifications and methodologies to be submitted to Manchester council.

Abstract

The Piccadilly Warehouse survey involved an inspection of two buildings; Mindell House; adjacent to Minshull Street and Bloom House on Bloom Street. Mindell House has some ornamental plaster work in its entrance and internal finishes made up of solid plaster, partitions and ceilings in lath and plaster and plaster board.

Bloom house is predominately brick exposed substrates, having an industrial finish with some ornamental work to its entrance and also localised plaster cornice on the upper floors, accessed by a geometric timber staircase with a plaster soffit.

There has been historical moisture ingress to Mindell House which has caused decay and degradation in plasterwork. There are signs of past biocide treatments to wall surfaces in Bloom House, where grid patterns of holes have been drilled into walls in an attempt to irrigate brickwork with chemical treatments to isolate mycelium from wood destroying fungi.

A team of surveyors and craftspeople from Whitechapel Art Plaster made an assessment of accessible areas of wall and ceiling finishes; firstly to Mindell House, starting on the upper floors and working down to the basement. Inspection was then made of Bloom House, to make observations of the ornamental entrance, cornice on upper floors, and to assess the

stair underside plasterwork using an endoscope, so as not to disturb the main geometric staircase soffit, checking the condition of these finishes and to determine the condition of grounds and substrates below finishes. Existing drawings for Mindel House & 11 Bloom Street were highlighted with markers to produce simple reference diagrams and some camera images have been used to also act as points of reference.

This report will identify the requirements of the client's instruction from which conclusions will be drawn and recommendations made.

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MINDEL HOUSE

Mindel Fourth Floor

The fourth floor of the building has a lath and plaster ceiling which is in a poor state of repair and with de-bonded (live) lime plaster work in three coats; scratch, float and setting. The plaster work is falling away from the ceiling joist and lath substrate to which it should adhere.

There is some water damage, perished plaster and what possibly may be past fire damage. The building also looks as though it has been subject to structural movement as lateral restraint bars run through the building and are anchored on external brickwork surfaces with steel round plates. This movement may have caused some cracking and distortion of plasterwork, substrates and grounds, but a bigger problem is that the ceiling joists are under sized and over stressed and do not appear to be fit for purpose. As a consequence, much of the timber work supporting the plaster ceilings is bowing, splitting and has in some areas snapped right through the ceiling joists which are not strong enough or sufficiently hung or braced to support the ceiling. The full ceiling should be replaced.

There are damaged timber window reveals to the fourth floor with a bull nose finish rather than a sharp arris which are set out to work with the finished plaster lines. Where these window liners are damaged or missing new timber liners should be made and fixed in place and set to work with new solid plaster work. A mix of materials can be found used in the surface wall finishes. There are areas of original solid lime plaster, areas of lath and plaster and contemporary gypsum base coats and plaster boards, with other areas bonded and over

skimmed with thistle and carlite finishing plasters. A drawing of the fourth floor has been marked up to show these areas.



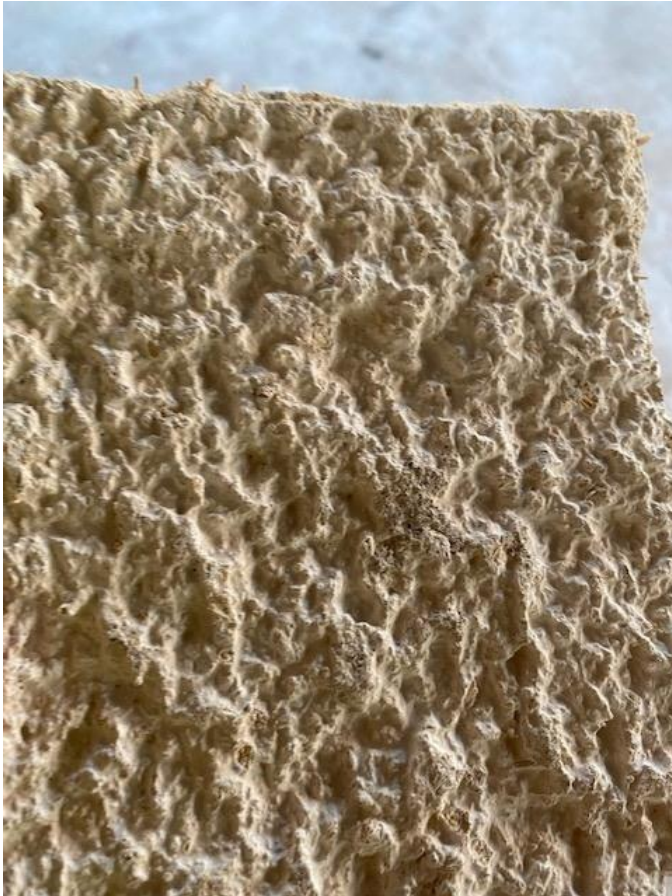
Mindel House Fourth Floor wall lime plaster



Mindel House Fourth Floor Lath and Plaster Ceiling

Mindel Third Floor

Again, there are a number of timber window reveals which are damaged on this floor and will require replacement. The perimeter walls and a central area are original lime plaster and the main access staircase has lath and plaster partitions. There are also some plain faced fibrous bench made sections of plasterwork to the stair partition on this floor which are incorporated within lath and plaster sections of partitioning work. These areas have been marked on a drawing of the third floor.



Third floor fibrous plain face work from third floor partition

Mindel Second Floor

Again, there are a number of timber window reveals which are damaged on this floor and will require replacement. The wall finishes on this floor are original lime plaster along the Bloom Street and Minshull Street elevations with a gypsum bond and over skim coat along the Richmond Street elevation. The main stair access has partition walls with lath and plaster and there is a section of plasterboard along the corner of the Bloom Street elevation. These areas have been marked on a drawing of the second floor.

Mindel First Floor

Again, there are a number of damaged timber window reveals which are damaged on this floor and will require replacement. The Bloom Street, Minshull Street, and Richmond Street elevations of this floor have the original lime plaster, as does the return wall adjacent to the back staircase and a central section. The main access staircase has lath and plaster partitions and there are some additional lath and plaster partitions along and adjacent to Bloom Street. Along the back wall of the building returning from Bloom Street there is a section of gypsum over skimming and to the central section of this wall adjacent to some doors is a premix gypsum base coat. These areas have been marked on a drawing of the first floor.



Lime plaster losing its adhesive bond to the brick substrate

Mindel Entrance

There is a small ornamental barrel ceiling to the entrance with curved coffered panel moulds with an egg and dart enrichment running along the inner part of the panel moulds. The remains of a metal frame appear to be in place where a false ceiling has under drawn this original feature. There is also a paint finish which has been applied to give a terrazzo type finish. Most of the damage to this ceiling is superficial and can be repaired and made good in situ.

Mindel Ground Floor

The wall finishes to the ground floor are made up of solid lime plaster in three coats, lath and plaster on timber grounds and plaster boards on stud partition walls. The window reveals on the elevations adjacent to Minshall Street and Bloom Street are formed in lath and plaster. A drawing has been marked up to show the make up of the plaster wall finishes.



Damaged timber window reveals

Mindel Lower Ground Floor (Basement)

The lower ground floor is a basement which appears to have been converted to and used as a club or bar. It is below ground level and the existing wall finishes are damp and degrading as a consequence of lateral movement from raised above floor external ground levels. The internal finishing plasters in this area are incompatible with wet substrates and they have been damaged by moisture ingress through to inner decorative surfaces. The movement of water through the walls has caused the migration of salts through to internal surfaces and these have and are being deposited at points of evaporation. These salts appear to be deliquescent and hygroscopic and this deposition at and near the surface is exacerbating the problem of dampness and degradation. There is also some lath and plasterwork to the ceilings which will require removal as it is both decaying and overstressed and as a consequence of this, is falling in.



Mindel cracking modern to upper plaster work around staircase

BLOOM HOUSE

Upper Floors

The upper floors of this building have an industrial type exposed substrate brickwork finish which we were told at the time of our visit is to remain. There are localised areas of ceiling cornice on the first floor which will require matching and infilling along beams supporting suspended floors where the ceiling abuts existing and matching plaster cornice. The first floor wall that runs adjacent to Bloom street is to be lime plastered in accordance with recommendations for plastering in this report. A note of this is made on marked up drawings. Existing plaster work which is to be retained, to have its surfaces for decoration upgraded with compatible lime fillers, or if strengthening of existing plaster work is required, to achieve improved cohesion within the wall lime plaster, a reinforced lime over skim can be applied to surfaces to be decorated with the approval of surveyors, consultant surveyors and heritage officers. There is no lime plaster element on the ground floor of Bloom.

Ornamental Entrance Ceiling

The entrance to Bloom House has an ornamental plaster ceiling as in the entrance to Mindel House. There are sections of enrichment to this ceiling which are missing and damaged and these will require remediation with new templated and moulded matching sections.

Geometric Staircase

This is a complex structure which shows signs of movement, cracking and some distortion. For this reason a surveyors endoscope was used to look behind the plaster work to look at the grounds and support for the staircase behind the underside plaster soffit enclosing the staircase. We found, where the scope was put through the staircase soffit, that some contemporary gypsum plasters have been used to over skim this soffit and that the walls enclosing the stair case have also been subject to bond, board and over skim. In line with the specification for Mindel House these sections of plaster work should be removed, including the stair soffit, this will allow for an engineer to access the component parts of the staircase and to make recommendations to strengthen where necessary to ensure adequate support when it is in use and to prevent further movement, prior to re-forming and plastering the staircase soffit and walls.



Above: Staircase treads above cracking falling in to central stair sections and as a consequence out of level



Above: Cracked and deboned geometric stair soffit



Gypsum plaster enclosing geometric staircase

Conclusions

Mindel House requires extensive plaster removal and reinstatement. The lath and plaster ceiling on the fourth floor is not fit for purpose either now or when it was installed and should be removed and replaced.

On the fourth floor all the original lime plaster should be removed and replaced. Because of historical moisture ingress and channels cut into plaster work, an allowance of up to sixty percent of the wall plaster finishes should be made. On the access to the stair ways an allowance of up to thirty five percent of the lath and plasterwork should be made. In the basement all wall, ceiling plaster and wall plaster should be removed and either a tanking system or water controlling drained cavity system should be installed to manage and control this below external ground level environment, together with adequate ventilation in this area.

All areas of de-bonded plaster marked on the drawings or identified as beyond repair and requiring removal to be stripped back to the substrate and re-plastered in a compatible traditional lime plaster mix. The plaster mixes are to be assessed on a floor by floor basis, and area by area basis, on each floor, as the existing perished and de-bonded plasters are stripped back, and removed from site. New lime plaster mixes to be as near to the petrographic analysis of original plaster as is reasonably practicable, in accordance with results obtained by Hutton and Rostron; see plaster specification in item 4 on page 13 of this report.

Where timber window reveals are missing or decayed on the floors of Mindel House bespoke sections should be made and fixed in place prior to re-plastering works.

On the fourth floor there are fifteen damaged window reveals, on the third floor there are eight damaged window reveals, on the second floor there are three and the second floor there is two. On the ground floor the window reveals are lath and plaster.

The entrance to Mindel House has an ornamental ceiling with some superficial damage and a lump sum will be given for carrying out localised repairs to this area in the recommendations section of this report (this will not include removal of the remains of a later metal frame false ceiling or removal of paints).

11 Bloom Street has exposed brickwork which is to be retained. The first floor of Bloom requires lime plastering, in part, to the front walls facing Bloom Street, in accordance with recommendations in this report and as per the mark-up plans; using lime fillers or a reinforced lime over skim, where approval is given for such an upgrade a retained plaster work requires strengthening. An allowance will be made in the recommendations section of this report for plaster cornice as required. Mould, metre and mitre prices will in that section be allocated for these items of work.

The soffit of the geometric staircase appears to have been bonded and over skimmed so this should be stripped back and replaced. At the same time this will allow engineers to make an assessment of existing support for the staircase which at present is inadequate as the treads to the middle section of the staircase are out of level and moving in and down on the stair central sections. The plaster work, (including curved wall enclosing the staircase) has boards, bonding and over skim which is also moving with the staircase and is cracking quite severely at higher levels on the stair case. These areas of board and plaster work should also be removed and replaced.

In the entrance to Bloom House there is damage to the ornamental plaster ceiling including some missing enrichments and members which will require templating, moulding, run, cast and fixed, to return the entrance to its original appearance (no allowance is made for

removing false ceilings or paint). A lump sum will be included for this in the recommendations section of this report.

RECOMMENDATIONS

Mindel House

1. Take down and remove defective lath and plaster ceilings £
2. Hack off and remove defective solid lime plaster £
3. Supply, fix and finish lath and lime plaster ceilings using saw lath fixed to new existing treated timber grounds (grounds fixed by main contractor after fire proofing works). The build up of the lath and plaster ceiling is to be in three coats with a haired (goat) traditional lime and graded plastering sand scratch coat, a lime and graded plastering sand float coat, and a one to one lime putty and fine plastering sand setting coat, with an overall thickness not exceeding 25mm £
4. Our initial preference for a plastering specification for this project; was to produce a traditional lime plaster mix, which was compatible with the internal brick substrate, or specific substrate areas; applied; with an aggregate to binder matrix ratio of between two to one and four to one depending on the strength of the substrate, assessed by surveyors and craftsmen as areas were stripped back and opened up for the application of new plasters. Weak back grounds and strong mixes which have vastly differing drying coefficients; can separate at their interface, and cracking and de-bonding can occur. This may well be the case to areas of de-bonded plaster, in Bloom and Mindel, but without exposing the substrate it is not possible to make an accurate detailed assessment, or indeed differentiate between damage resulting from incompatible substrates and mixes, or historic water damage, or even anticipated degradation through age.
5. To machine and set in place each damaged or decayed window reveal £
6. To repair the front entrance ornamental ceiling to Mindel House £
7. To manufacture fix and finish fibrous plain faced partition finishes £
8. Where and over all thickness of wall or ceiling plaster is to exceed to 25mm allowance then extra scratch coats can be applied at a cost of £
9. Existing areas of wall plaster which are to be retained can have their surfaces upgraded for decoration using fine sand and lime putty fillers. Again if time, dampness and programme are considerations then a contemporary lime over skim coat can be used to upgrade surface finishes which do not provide an even surface for decoration.

11 Bloom Street

- 1 Replaster first floor walls in part as described above and as per mark-up plans.
- 2 To make individual plain cornice reverse moulds (one off charge) up to 140mm projection onto ceiling and down wall £ plus VAT. To cast and fix plaster cornice as

required by client £ per linear metre. Each internal and external mitre to be made good and finished £

- 3 To remove soffit from geometric stair case £
- 4 To reinstate soffit to geometric staircase £
- 5 To remove plaster from stair walls £
- 6 To apply lath and lime plaster finishes to stair walls in Bloom House £ (where these walls are partitions the studs and grounds to be fixed by others).
- 7 To template, mould, match and fix missing sections to ornamental plaster ceiling in Bloom House, and make good in situ cracked sections £.
- 8 Scaffold tower hire up to three metre height £ per week each individual tower.

Note: No allowance has been made to access stairs case areas and other areas where access maybe above a three metre platform working height.

General

We have the plaster reports from Hutton and Rostron which provide information about the make up, and the component parts of plaster mixes. We have been advised that these mixes are to be replicated where possible. This will entail an unfolding of a process, as we research and liaise with our suppliers; such as Rose of Jericho (for example) to source the aggregates and binders; producing a match which is as close to the petrographic analysis results as is reasonably practicable. Where there is the possibility that a like for like mix is incompatible with the existing substrate, a decision must be taken by a specifier or consultant involved with the delivery of the project plaster works, prior to commencement of plastering to make the decision on how best to proceed. Hutton and Rostron have also noted that there are animal hairs within the lime plaster base coats, but the type of animal hair is not named. Our assessment is that the animal hair is from horses. This type of hair is not used usually in contemporary works, because of the risk posed by anthrax spores. In fact hair imported from China, which did occur in the past, could possibly contain anthrax spores, so it may be necessary to obtain tests on the existing animal hair contained in the existing wall plaster. The traditional contemporary lime plaster base coat mixes; used by Whitechapel Art Plaster Co Ltd, would usually contain goat hair, unless there is a specific requirement to source an animal hair which has been laboratory tested and is a near match for the animal hair used in the original plaster mixes in Bloom and Mindel; provided that the hair is free from harmful contaminants.

The Hutton Rostron report also makes a recommendation that the existing brick substrates are raked out to a depth of 10mm prior to the application of the first base coats of haired lime plaster. This raking out process will be a time consuming process which will be dependent on the strength of the mortar used to bed the substrate brickwork. The raking out process may also create dust which could cause difficulties for other trades working in ambient atmospheres. Even using hand tools there will be dust, or if mechanical grinding chasing out devices are permissible, even with damping down and extraction; there will be an amount of dust produced from this work. It will be difficult to work to a modern day programme following the specification and recommendations of the plaster test reports, especially with the historic water ingress as lime plaster mixes set by carbonation which will not occur where walls retain dampness. Even mildly hydraulic limes which

tests suggest have been used in areas of the building, which will eventually start to set in the presence of moisture, will take extended time periods between coats to set in these types buildings where long standing moisture is trapped in walls. If in areas where the set is not likely to take place because substrates do retain moisture, a lime plaster premix; containing eminently hydraulic lime can be used, and this will set in the presence of moisture, and will draw moisture out of walls and assist the drying process, as well as working with the time scales of a modern day construction programme.

Cornice and fibrous plaster in the Bloom and Mindel buildings are a mix of run in situ, moulded timber, and fibrous plaster. The enriched areas are fibrous plaster. Again these cornices can be matched like for like or if programme, fire protection and compatibility are required then fibrous plaster would be the best solution to cornice repair, and the most stable as two types of fixing are used to keep it in place; plaster adhesives and mechanical.

To carry out the work in accordance with the specification in this survey report, and to work as closely as is practicably possible with the Hutton and Rostron report, is an unfolding of process and cannot therefore be calculated on either rates or a fixed price. The work as it stands can be taken on as a cost plus undertaking with skilled solid and ornamental plasters at £45 per hour and materials plus 20%. The build up of solid plaster coats will be a haired scratch coat up to 12.5mm thickness, followed by a float coat up to 12.5mm thickness and finished with a setting coat of between 3 and 5 mm. Where the over all thickness of a completed solid plaster coat exceeds 25mm then additional scratch coats will need to be applied to obtain the required thickness of plaster in not more than 12.5mm for each coat. A setting time between the traditional specified plaster coats of at least seven days should be allowed and this time may need to be extended if the walls being plastered have high moisture contents which restrict the lime plaster carbonation and subsequent setting time. Where contemporary lime pre-mixes are permissible, setting times between coats will be greatly reduced, as more hydraulic lime in the pre-mixes will allow a setting action even in the presence of moisture.

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For and on behalf of Whitechapel Art Plaster Co Ltd

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