13 Mornington Crescent
Report on condition of the upper facade and recommendations for repairs.

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The house forms the end of a terrace on the corner of Mornington Crescent and Clarkson Row. The terraces were laid out in 1821-22, described by Pevsner as "a curved terrace with pretty balconies and door cases with inset fluted columns". The terrace originally faced open ground between the Crescent and Hampstead Road, which was built over by the art deco factory building in 1926. The earliest depiction of the property on mapping available online is from Cruchley's map of 1826, though there are discrepancies in the depiction of Clarkson Row during the period up to the mid 1830's. This period is a key factor in considering the most appropriate render mixing for effecting the repairs.

This report addresses various issues in the following order:
1. Background to renders on this vintage of building
2. Structural and masonry condition
3. The cornices
4. Method statements for masonry repair, rendering and cornices


Fig.1 Parapet on corner


Fig. 2 Rear of south parapet

1. Background to specification of the render mix

1.1 Current conservation best practice highlights the problems that use of modern cement-based renders impose on older structures: the cement render may be strong, but it is inflexible, and once cracked, admits water into the porous brick substrate, yet the impermeable skin hinders the ability of the moisture to evaporate back out through the face of the wall. Once cracks are established, continued ingress, and the effects of freezing and thawing cause a deterioration in the brickwork, leading to instances of the strong skin pulling away from the weakened substrate. This appears to be the case on the outer face of the roof parapet, where the skin is fractured, and exposed underlying bricks very crumbly and friable. It is a commonly observed problem on this vintage of building in the locality. Facades are re-rendered or repaired, yet cracks re-appear after only a few years.

1.2 The repairs to pre-C19th renders is relatively straightforward, as the mixes were commonly of lime/sand composition, and the continued use of the same material provides best compatibility and durability. During the period in question at Mornington Crescent, render mixes were augmented with additive such as kiln slag and ash to make 'natural' "Roman" type cements, that develop strength more quickly and are more resistant to weathering. This often had a brownish hue compared to the buff lime mix, and is quite likely to have been used here. A major challenge is to distinguish between original and later repair material, as the building has obviously been subject cycles of repair and modification.

1.3 The second two decades of the C19th saw the introduction of 'artificial' “Portland” type cements, with those produced from the 1850's most resembling modern cements. The relative merits of of these are outweighed by their incompatibility with any underlying lime-based construction. Observation of the very sandy mortar joints in the upper parapet clearly show this to be of lime construction, with the bricks being of natural clay, with quite a delicate and open structure, very similar to those noted in the example project illustrated later in this report. In that example, they where known to have been produced from local clay, and fired locally.

1.4 The key consideration for this repair is that the underlying masonry is not compatible with harder cements, so a lime-based solution is recommended, albeit with risks of incompatibility where it directly adjoins remaining “Portland” cement based rendering, or to a lesser extent the “Roman” type. The placing of transition points between the remaining and new work at corners and cornice junctions, for example, will be helpful. The mix, and specification are set out after the sections concerning structural issues and masonry repairs.

2. Structure and masonry repairs

2.1 Visual inspection indicates that the building is generally sound, though surface cracking is evident above some windows, and along the roof parapet, in particular on the curved corner section, where the brick is also in poor condition, raising the question of whether any reconstruction should take place. The projecting cornice on the Clarkson Row side also raises a number of questions, dealt with further below.

2.2 The cracking above the windows takes place along the natural weak points of the facade. They can persist due to minor cyclical movement from ground moisture or possible thermal expansion and contraction. If these look persistent, then 'Helibar' repairs are recommended. A chronic crack over one of the windows shows some slippage of the rendered profiles. This may indicate a problem with the lintel. If there is no evidence of stressing internally, or recent stressing externally, then no further remedial work is recommended.

Fig. 3 Crack through rendered string course above window on the east elevation.

It would be worth investigating whether this is superficial or also through the substrate. This could initially be done above the moulding, but the work may involve re-running of the mounding in render.

Fig 4. Old crack through mouldings

2.2 The poor condition of the parapet's external face contrasts with the internal face, whose modern render, including over the top surface, is intact, with no sign of cracking or stressing. Although the exterior surface is in very poor condition, retention and consolidation of the existing fabric should be possible, and would avoid the expense of dismantling and rebuilding the brickwork.


Fig. 5 Parapet on south side


Fig. 6 Detail of poor brickwork

2.3 The brickwork below the parapet courses is in better condition, and would provide a stable base for the insertion of new bricks to replace the most severely damaged ones (i.e. those that have lost more than 35mm from the surface).

2.4 Although the top of the parapet is intact, the rendered upper weathering surface, being formed in render, is a relatively vulnerable detail compared to the use of coping stones or cover flashings. Most of the neighbouring buildings incorporate coping stones, which is likely to have been the original detail here. The curved profile across the top of the parapet is not ideal for fitting coping stones over. This render would ideally be taken off to form a horizontal surface though at the risk of considerable disruption to the brickwork and render face to the inside of the parapet. Alternatives would be to apply a stainless steel expanded metal lath and build up a horizontal surface in mortar, over which coping stones may be laid, or over-clad the parapet in a lead capping. Both solutions would be in keeping with the building from a conservation point of view.

2.5 There is an instance of an embedded timber within the wall on the top storey level of the curved corner. This should be extracted and the hole filled with brick set in lime mortar.

3. The cornices

3.1 The building, along with a number of its neighbours, has had its ornate projecting cornices replaced with glass reinforced plastic (GRP) versions. The methods by which these had been installed had not helped with the condition of the building. Chases were cut into which the top of the profiles were slotted (e.g. visible in Fig 5 and 6) but left in a way that was vulnerable to water ingress around the slots.


Fig 7. Detail of mid height cornice


Fig.8 Wall at mid height in fair condition.

3.2 The cornices at parapet level were applied to plain stucco, which appears to have previously replaced any original render cornices. It is assumed that there were originally projecting cornices at this level by comparing with the neighbouring buildings and photograph from the 1950's.

Fig 9. Corner of Mornington Place (No. 25)

Fig 10. Other corner on Clarkson Row (No.12)

3.3 At 25 Mornington Crescent (analogous to No13), a coping is visible on the parapet, projecting cornice at the base of the parapet, and projecting cornices to front and side. At No. 12, opposite No,13, the cornices are of a flatter profile, the mid-height one being similar to the flatter profile behind the GRP one on No.13. There is no easy correlation between the three buildings that can lead to an immediate conclusion that one represents the original of a more 'correct' configuration. Decorative details are often sacrificed over time when repairs take place, particularly so during the early to mid 20 th century, when the relative decline of the social class of the population in the area would have led to more austere maintenance methods, with very little interest in conservation. The historical records from mapping also indicate that although similar, No's 25, 13 and 12 were built in different phases of development between 1821 and 1824 at the earliest, with some maps suggesting No.12 being later still. This means that the buildings clearly form a unified set, they may well have differed in detail.

Fig.11 The terrace in the 1950's

Fig.12 South cornice (west end)

3.4 The photograph from the 1950's indicates the most likely 'truth', with projecting cornices at high and mid level, which is probably what should be aimed towards from a conservation point of view. Of key importance is the mid-height cornice on the Clarkson Row side. The recent GRP cornice had been placed over a base of projecting masonry in the form of brickwork supported by cantilevering stone slabs (Fig.12). From the SW corner it can be seen that the stone slabs are embedded deeply within the wall, so are structurally stable, but the brick is friable in places and would benefit from consolidation with lime mortar, even in the event of reinstating the GRP moulding. If reinstatement of the cornices in solid render were to be considered, a structural assessment would be required to check the loading in relation to the sheering strength of the stone slabs.

3.5 It appears that there is plenty of precedent for the use of the GRP cornices along the street, which is not a Conservation Area, so is not subject to the stricter conservation requirements that a CA would demand. At the same time, the terraces are of considerable character, and it is clear from the appearance of those houses where the cornices have been removed that the quality of the streetscape is poorer for their disappearance. As the GRP cornices from No.13 survive intact, it would be most pragmatic to re-use them, though with better weatherproofing details where they are fixed to the facade. The running of render ones to the same degree of projection would be a lengthy exercise involving the most specialist of tradespeople and specification.

4. Methods and specification

The methods described here are predicated on the stabilisation and consolidation of existing brickwork, closely coupled with the application of hydraulic lime-based mortar and render, illustrated by similar work undertaken on a North London church in 2007, which has lasted well to date

4.1 Brick Repairs

Where bricks are missing, very loose, or the surface broken back more than 25mm from the surface, then cut out pockets for full length or half-bricks. Brush the wall to remove free fragments.

Example showing rough wall with loose bricks

Example showing where defective or loose bricks have been cut out

Piece in replacement clay bricks (suggest salvaged or second hand), set in full bed to all sides of **lime mortar mix: 1 NHL3.5 hydraulic lime to 3 parts washed sharp sand.**

4.2 Render

The rough face of the existing brick will be advantageous for forming a key for the render. Any pockets and irregularities should be daubed out in lime mortar of the same specification as above, in layers up to 15mm, which should be allowed to set before adding a further layer. The substrate should be sprayed in water before applying the mortar to avoid over-rapid drying out and cracking. Once the surface consistent to 10-15mm to the face, then the first 'scratch' coat of lime render can be applied. **First coat mix: 1 part NHL 3.5 lime to 2 parts sharp sand.**

First coat up to 10mm thick

After sufficient curing of the first coat, apple a **'float' coat to the same mix**, followed by a **finish coat in mix: 1 part NHL 3.5 lime to 2.5 parts sharp sand.**

The example illustrated here happens to show one of the advantageous properties of the lime mix: that in the case of minor cracking or crazing, the newly exposed lime carbonates and fills the crack. The material is also vapour permeable, allowing for latent moisture within the wall to evaporate out, which dictates the recommendation for the most compatible paint.

Finish coats 5-8mm thick.

4.3 Preparation for render repairs abutting remaining material

Defective render should be cut out with a sharp chisel, undercutting slightly all of the edges except for the bottom edge. Loose or broken bricks uncovered by the stripping of the render should be prepared as above.

The effectiveness of this method relies on the following:

- Undertake any structural repairs, such as Helifix bars to cracks first.
- Although the bricks on the upper parapet are delicate and friable, the working-in of lime mortar daubing out into the crevices and shards will stabilise the brickwork with a material that will remain compatible when the wall is subject to thermal and moisture fluctuations.
- Substrates should be moistened before application of the lime mortar (brickwork sprayed, and undercoats of mortar should be over-coated when set firm, but still damp).
- Edges cut to remaining existing render should be under-cut to top and sides, to achieve a good key at the junction. It is better still to cut back the areas of render where being replaced to the nearest junction line against corners, window surrounds, cornices etc.
- No work to be done if there is a risk of freezing
- In hot temperatures, wet hessian should be draped over the render while it is curing to avoid heat shrinkage cracks
- Where cracks in previous render require filling, and don't appear to be connected with structural movement, we recommend raking them and using the lime mortar mix or Keim Spatchel. http://keimpaints.co.uk/products/render_systems/fillers/
- Very thin cracks can be filled with a neat lime grout.

4.4 Paint specification

The use of Keim mineral paint is recommended. This has a silica mineral content that forms a chemical bond with the previously painted and unpainted substratea, and is therefore resistant to peeling. It is also vapour permeable, allowing any moisture within the wall to 'breathe' through and evaporate, without stressing the painted surface. Three of the products would be suitable, with their slightly differing attributes a matter of judgement and budget.

Keim Granital:
Apparently used on the factory building opposite
http://www.keimpaints.co.uk/products/external_paint_systems/granital/
Keim Soldalit:
Has enhanced weathering characteristics
http://www.keimpaints.co.uk/products/external_paint_systems/soldalit/
Keim Soldalit-ME
Incorporates titanium dioxide which breaks down pollutants and helps to keep the surface cleaner for

longer
http://www.keimpaints.co.uk/products/external_paint_systems/soldalit_me/

5. Weathering to upper parapet
The background to this is noted in paragraph 2.4 above.

5.1 Option for capping with coping stones.

5.1.1 Carefully remove the curved upper render surface, taking care not to disturb the inside face of the parapet.
5.1.2 Apply a full lime mortar bed to the top of the brickwork and lay a textured Damp Proof Course, such as IKO Permabit or Hyload
5.1.3 Apply a full lime mortar bed and set proprietary coping stones with the upper surface to fall back towards the roof, and a drip-shed profile to the outside face
5.1.4 Point the joints between the coping stones in the lime mortar
5.1.5 The same lime mortar mix of 1:3 NHL3.5/sharp sand is recommended, as it has a degree of flexibility with thermal expansion and contraction.

5.2 Option for capping with lead flashings
Recommend installers who are Lead Sheet Association certified

5.2.1 Ensure that any holes or irregularities in the existing rendered upper surface are filled.
5.2.2 Fix continuous copper clips to the inside and outside faces of the parapet
5.2.3 Form cappings in Code 5 lead in 1.5m lengths, welted at the joints. Dress with turn-ups into the clips.
Notes:
- Details as Fig 167 of the Rolled Lead Sheet Manual in appendix sheet.
- The capping will follow the curve of the existing parapet, which will result in some water being shed over the facade. Depending on the skills of the installers, it would be possible to install a board underlay with timber grounds to ensure the top only slopes inwards.

5.3 Option for other pre-formed cappings.
Study of photographs of some of the other houses in the terrace suggest that the GRP cornice suppliers may also offer parapet cappings. Their compatibility to the curved surface, and fixing methods would need to be checked with the suppleirs.

6. Weathering to cornices

6.1 The cornices appear to have a low upstand at the rear, where the units are screw-fixed into the wall. Evidence suggests that on the parapet cornice, a modest flashing was chased into the wall and overlapped the fixings.

6.2 The mid height cornice to have had a similar detail, though water had been getting behind.

6.3 The vulnerability with this detail lies in the fact that the cover flashing to to the fixing upstand was not very high, making the chase through the plaster very close to where rainwater could splash back from the top of the cornice. The recommendation is to form a high cover flashing in Code 5 lead two bricks high, so that the chase is higher up from the cornice. The bottom of the flashing should be welted so that the leading edge is robust. The lead should not be in contact with the cornice upstand, in case of capillary action allowing water to reach the screws fixing the cornice to the wall. The stopping of the render above the cornice upstand will ensure that the face of the flashing is well forward.

6.4 The chase at the top of the flashing should be about 25mm deep, and should be formed prior to the rendering. The lead should be turned into the chase to the full depth, and covered over with a stop bead to the base of the render with a lap of no less than 25mm. See appendix sheet.