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for THOMANN HANRY UK

REPORT ON:
FAÇADE SURVEY –
MELIÃ WHITE HOUSE HOTEL

TH / MWH

JULY 2014

18 Whitby Avenue,
NW10 7SF,
info@Thomann-Hanry.co.uk

Park Royal,
London
www.Thomann-Hanry.co.uk

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1. Introduction

1.1. Mr T McMorrow – Chief Engineer at Meliã White House Hotel – appointed Thomann Hanry to carry out a survey of the elevations to ascertain the scope of any remedial or further investigative works.

1.2. The building dates from 1936, is steel framed construction, typical of its age, clad with pale cream faience tiles. It is star shaped on plan approximately 90m North – South and 58m East – West. 9 storeys high.

1.3. The results of the survey are marked up on drawings TH / MWH / 01 – 09 appended to this report.

1.4. Items needing attention are marked:

i. H – for any items needing urgent - within the next 6 months.

ii. M – for any items that should be addressed within the next 2 years.

1.5. All other items are considered to be lower priority, but should be addressed within the next 5 years to minimise future deterioration due to water penetration of the fabric.

1.6. The survey was undertaken on 14 July 2014 from street level using binoculars where necessary. The weather was fine and clear.

1.7. This is a visual assessment only and conclusions are drawn based on the surface evidence. There may, therefore, be other defects that are not evident in a survey of this nature, which could materially affect the conclusions of this report.

2. Observations

2.1. The attached marked up elevation photographs show the principal defects noted during the binocular survey. Only specific faults are noted below by elevation:

TH / MWH / 01 – Osnaburgh Street – 1/3

2.2. There was one patch of loose tile at 7th floor that should be removed.

2.3. Some longitudinal cracks were noted over the 5th and 6th floor windows, these should be investigated further.

2.4. There was staining to the face and joints with a long crack at the internal corner above the 8th floor. This is below a service area and should be investigated for leaks.

TH / MWH / 02 – Osnaburgh Street – 2/3

2.5. There were significant horizontal open joints at the base of the parapet walls to the balconies, accompanied by widespread cracking at the corners and opening at the vertical corners.

2.6. There was a patch of faience that was losing the glazed faces.

2.7. The waterproofing over the ground floor door was lifting.

TH / MWH / 03 – Osnaburgh Street – 3/3

2.8. There was a pattern of high level vertical cracks running through open joints near the corner.

2.9. There was a pattern of horizontal cracks at the head of the 8th floor windows, beneath the cantilever slab.

2.10. There was a pattern of vertical cracks on the corner stair.

TH / MWH / 04 – Longford Street – 1/2

2.11. A patch of render to the soffit of the cantilever adjacent to the stairs appears to be coming loose. This should be investigated and repaired.

2.12. A large portion of concrete around the octagonal hole at the internal corner of the elevation appears to be spalling off. Corroded reinforcement was evident where other portions of concrete had previously failed. This needs to be addressed urgently.

TH / MWH / 05 – Longford Street – 2/2

2.13. There was a pattern of vertical cracks and open joints at the corner of the main elevations and at the corner of the stair.

2.14. A patch of soffit render appears to be spalling.

TH / MWH / 06 – Albany Street – 1/3

2.15. There was a pattern of vertical cracks and open joints near the end of the main elevation.

TH / MWH / 07 – Albany Street – 2/3

2.16. As on Osnaburgh street, there was a pattern of open joints with cracks to the stepped balconies and the corners.

TH / MWH / 08 – Albany Street – 3/3

2.17. There was some minor cracking the high level elevation.

2.18. There was significant cracking and open joints at ground floor near the corner.

TH / MWH / 09 – Osnaburgh Terrace – 1/2

2.19. There appeared to be spalling render or concrete from the roof of the corner stair as well as the soffit of the adjacent cantilever roof slab. This should be investigated.

2.20. There was a pattern of fine cracks in the cantilever roof.

TH / MWH / 10 – Osnaburgh Terrace – 2/2

2.21. There was a similar pattern of fine cracks in the cantilever roof slab to 2.20.

2.22. There were open joints and staining to the planter above the main entrance.

2.23. There were many fine cracks near the corner.

The Elevations Generally

2.24. There were several windows with cracks running into open joints above forming an arch shape.

2.25. The cracks where observed near ground floor were generally stained, suggesting that these were long standing cracks.

2.26. There was very fine opening up of many of the vertical joints observed at low level.

2.27. There were mastic filled joints at the main corners; many of these had failed or were failing.

2.28. There were numerous small chips and spalled areas on the façade.

2.29. The roof waterproofing appeared to be functional. There were a few places where this needed to be re-attached.

2.30. The fillet over the projecting stringcourses was mastic and was only loosely adhered in many places.

2.31. The pointing to the vertical joints to the stringcourses appeared to be mastic, much of which was coming out.

2.32. There were many cracks to the stone balustrade to the perimeter pavement. These were stained and appeared to be long-standing.

3. Discussion & Conclusions

3.1. The principal structural elements are steel beams and posts, buried within, most likely, a brick façade with the faience cladding.

3.2. The roof and floors are concrete, the construction details are not known, however, building of a similar age were constructed with filler joists spanning between principal beams cast into the concrete slabs.

3.3. Protection to the steel was usually with lead paint and the inherent alkalinity of the concrete or lime mortar depending on location.

3.4. Over time both lime mortar and concrete react with air and through a process of carbonation lose their natural alkalinity, thus the protection to the steel is diminished or lost.

3.5. Once the protection is lost, on contact with water and oxygen the steel corrodes, producing rust that, typically, takes up 7 – 14 times the volume of the base metal i.e. this is a highly expansive process. This results in opening up of joints and cracks in the masonry and is known as “Regent Street Disease”.

3.6. Treatment of Regent Street Disease is achieved by locally opening up the structure to expose the steel, cleaning these back to base metal for the extent laminar corrosion is evident, treating the steel with an epoxy paint, then rebuilding. Often, the process results in significant loss of faience, requiring more to be manufactured.

3.7. The most significant areas of expansion and cracking were the two stepped balcony wings. These should be investigated further to determine if the cracking is due to Regent Street Disease or another cause.

3.8. There were other areas where concentrated patterns of cracks and open joints suggest Regent Street Disease; these should be opened up to confirm the cause.

3.9. Similarly, lintels were typically part of the steel frame, thus susceptible to corrosion; where arch type cracks and open joints occur above windows, these are likely corrosion induced and should be repaired.

3.10. Buildings expand and contract with changes in temperature. As this building dates from 1936, there are no expansion joints anywhere in the structure to accommodate this thermal movement.

3.11. The geometry of the hotel is such that there is a massive central core with relatively slender wings radiating outwards. The thermal movement occurs over the whole length of the elevations, is static at the core with the full extent

of the expansion pushed out to the ends of the wings. This results in the opening up of the joints and the cracking evident on the corners and especially at the stairs.

3.12. The mastic to these corner joints has generally failed; these, therefore, allow water to penetrate the fabric of the building, accelerating corrosion in the steel frame.

3.13. The joints should generally be cleaned out and repointed with mastic.

3.14. There were many small chips and spalls to the faces of the tiles. Although unsightly, these are unlikely to promote further deterioration of the façade and could be left.

3.15. Where the chips or spalls are significant, the tile should be repaired either by whole tile replacement or by cutting out repairing with mortar, with a suitable glaze coat to replicate both the appearance and water protection of the faience.

3.16. Once the investigative works are complete, a detailed specification and scope can be drawn up.

4. Recommendations

4.1. The works marked as highly urgent – H – on the drawings should be carried out within the next 6 months, preferably before winter as these will only worsen with freezing weather.

4.2. These generally relate to failed tiles, mortar or concrete that are at imminent risk of falling.

4.3. The works marked as moderately urgent – M – on the drawings should be carried out within the next 2 years.

4.4. Unmarked works should generally be addressed within 5 years. These relate mostly to the ongoing integrity of the façade and, while not immediately critical, will continue to deteriorate unless dealt with.

4.5. Areas of spalling render (or concrete) on the soffits of the cantilever deck should be assessed and removed and repaired where necessary.

4.6. Commission investigative works to determine the condition of the steel frame to the following areas:

i. Parapet walls to balconies on Albany Street and Osnaburgh Street.

ii. Wall near manager's office on Albany Street

iii. Over a typical window head

iv. At the corner of the staircases.

4.7. Replace the failed mastic to the vertical corner joints.

4.8. Replace the failed mastic fillet over the projecting stringcourses.

4.9. Repoint the vertical joints in the projecting stringcourses.

4.10. Repoint horizontal joints above all window heads with 1:3 lime mortar.

4.11. The rooftop and balcony waterproofing should be checked regularly to ensure there are no leaks.

4.12. Arrange a site inspection by a faience manufacturer to obtain costs and programme for replacements and to ensure colour matching.

4.13. Chipped and spalled tiles should be replaced.

APPENDIX

Marked Up Elevations