

Norland Managed Services Limited
Incident Report

1-1a Montague Street Building Movement 19.09.12

Reported by;- NAME		POSITION
Andrew Barrow		Contract Manager, NMS
CONTRACT		LOCATION –RESIDENT / MOBILE
BRITISH MUSEUM		RESIDENT
DATE	COPY No/s	NUMBER OF COPIES ISSUED
19.09.2012	1	4

The rear north east corner of 1-1a Montague Street has distorted causing mortar render to come away from the ground floor window.



Norland team have braced render and made good. I strongly recommend a structural engineer surveys building.

At approximately 09:00hrs on Wednesday the 19th of September 2012 the Norland team investigated a report of mortar falling from around the window in the rear garden of 1-1a Montague Street.

Findings:

Sections of the mortar render had fallen from around the north east ground floor window.

Rectification Work:

1. Install timber braces in window surround.
2. Make good mortar render
3. Report concerns with building distortion to Building Services Dept.

Action:

1. Building structure requires surveying by specialist.

Conclusion:

Building is 200 plus years old with an external 1st floor balcony. Distortion and cracking in building fabric requires specialist investigation.

ISSUED BY;- Andrew Barrow	POSITION	DATE 19.09.2012
	Contract	
	Manager	

RJH/17342-1

27th September 2012

Mr Nick Kendall
The British Museum
Building Maintenance Department
Great Russell Street
London
WC1B 3DG

By post and email

Dear Nick,

1 & 1a Montague Street, Rear Wall.

Further to our visit to the above Monday afternoon and our inspection of the distressed rear wall, we confirm the observations we made on site as follows;

General overview.

- i) This end of terrace property has suffered / is suffering a variety of problems associated with Georgian construction, but most critically the inadequate provision of header bricks bonding the inner and outer skins of brickwork together.
- ii) When viewed from ground level it would appear that in the past this Georgian end of terrace property has suffered from the brickwork expansion of the whole line of terraced houses, the upper storeys being more vulnerable as they are both exposed to more direct sunlight and are normally built with thinner walls. This would have sheared the bonding bricks in the upper walling however the problem would seem to have been addressed by the reconstruction of the top two storeys of walling, hopefully with more wall ties.
- iii) The left hand half of the lower rear wall has also subsided at some stage, witness the sill of the left hand ground floor window is some 100mm lower than that of the right hand window. However this also appears to have been attended to, the panel of brickwork below said window having been rebuilt with the general coursing of the wall being maintained by the substitution of a course of bricks on edge in lieu of two courses of conventionally laid bricks.

Hockley & Dawson Consulting Engineers Limited

The Great Barn
Smithbrook Bams
Cranleigh
Surrey GU6 8LH

Telephone

01483 548784

Facsimile

01483 268765

E-mail

admin@hockleyanddawson.co.uk

Internet

www.hockleyanddawson.co.uk

- iv) Unlike the upper storeys, for the most part the basement, ground and first floor brickwork still appear to be the original Georgian construction.

Current situation.

- v) Notwithstanding the remedial works noted in (iii), the fact that the bulk of the lower facing brickwork has moved is of structural significance because the outer skin can only have moved if the bonding bricks have sheared. i.e. it is likely that the 100mm thick skin of [original] facing bricks now effectively rises two storeys without any restraint !
- vi) The situation is further complicated by the fact that the rear elevation has a cantilevered balcony that relies on the integrity of the wall for its support.
- vii) We note that a large creeper/plant has grown on the line of the party wall shared with the neighbouring hotel and that this appears to be the seat of the local outward rotational movement of the facing bricks.

In all probability the spread of the suckers/tendrils from this plant penetrated an open brickwork joint for support, and once established their continued growth gradually pushed the now unrestrained skin of facing bricks outwards.

- viii) The amount of lateral displacement observed must now be very close to the point at which the affected walling becomes unstable and it is fortuitous that the metal posts of the adjacent boundary fence are at hand to offer some [limited] buttressing to the wall. Should the plant continue to grow, or if the displaced area of wall become subject to strong negative wind pressure, say during a storm, the critical 'balance' point of the wall could be crossed.
- ix) Given the second and third storey brickwork has been rebuilt in new brickwork it is probably that it will either incorporate new bonding bricks or metal wall ties. If this is the case then should there be a reduction in the support offered at ground floor level the higher walling would tend to 'arch' over the area of concern.
- x) Georgian floor construction usually [but not always] takes the form of primary timber beams spanning across the longitudinal internal walls to the piers in the external wall, with timber floor joists spanning between the primary beams. Thus in similar fashion to the external walling, should there be a reduction in the support offered at ground floor level it is likely that the first floor would be subject to localised displacement.

Precautionary measures.

To minimise the risks from controllable factors we recommend that;

- i) The rear rooms of the property are not used and any fragile or valuable items are stored elsewhere.
- ii) Staff are warned not to walk out onto or otherwise load the first floor balcony.
- iii) The left hand side of the rear patio is fenced off to prevent unauthorised access.
- iv) The nature and span of the suspended timber floors be confirmed by looking at the nailing pattern in the top of the floorboards, and appropriate braced internal propping introduced adjacent to the inside of the rear wall to ensure continued support to the suspended floors.
- v) The outer left hand corner of the balcony is propped to prevent any increase in the twisting moment applied to the outer skin of brickwork.

WARNING. There should be no attempt to apply any upward pressure on the balcony as this may disturb the current status quo of things, the [braced] prop should just be in contact with the underside of the balcony.

- vi) The museum should advise the neighbouring hotel of the problem discovered and develop some sort of joint approach with regard to the implementation of remedial works.

Recommendations.

- i) The roof parapets and rear rooms of the property should be surveyed to establish whether there are any other areas of concern and to clarify the overall structural condition of the construction.
- ii) An appropriate remedial work scheme be developed to re-establish and improve the robustness of the building, with said works being put in hand following consultation with the neighbouring hotel.

We trust that this report is sufficient for your current needs, but should you require clarification or expansion of any point please do not hesitate to contact the writer.

Finally we confirm that to date our inspection and report has taken 6¹/₂ hours of an engineer's time, which when taken on our current rate of £65/hour plus normal expenses equates to a fee of £460 + VAT.

Accordingly we would be obliged if you could please raise a purchase order for this amount to cover the work we have undertaken to date.

Yours sincerely
for Hockley and Dawson

A handwritten signature in blue ink that reads "Roger Howard". The signature is written in a cursive style with a large initial 'R' and a long horizontal stroke at the end.

Roger Howard

RJH/17342-4

23rd November 2012

Mr Nick Kendall
The British Museum
Building Maintenance Department
Great Russell Street
London
WC1B 3DG

By post and email

Dear Nick,

1 & 1a Montague Street, Remedial Works to the rear wall.

Further to the issue of our report on the movement of the ground and first floor sections of the rear wall at the above, and our telephone conversation of earlier this week regarding the likely scope and budget cost of remedial works to same we confirm the following;

Reasonable assumptions made regarding the scope of the required works

- The lateral movement observed has been triggered by the 'long term' subsidence of the rear wall in the area of the party wall shared with the adjacent hotel, and the continued+
- We understand that the second and third storey lifts of the skin of facing brickwork to the rear wall were rebuilt in the 1980's, accordingly it is reasonable to assume that the new brickwork would have been tied to the original inner skin of the wall.
- Without any apparent movement joints it would be reasonable to assume that the brickwork parapet to the rear wall would still have some expansion cracking.

Enabling works.

- Listed Building Consent and Building Regulation approvals will need to be obtained before remedial works are put in hand.
- As a long term Leaseholder the adjoining hotel will need to be served Notice with respect to the proposed works, and may/probably will ask that a formal Party Wall procedure is followed.
- A full height, freestanding braced working scaffold, complete with appropriate lighting and security alarm will need to be erected against the rear wall of the property.

Hockley & Dawson Consulting Engineers Limited

The Great Barn
Smithbrook Barns
Cranleigh
Surrey GU6 8LH

Telephone

01483 548784

Facsimile

01483 268765

E-mail

admin@hockleyanddawson.co.uk

Internet

www.hockleyanddawson.co.uk

NB. Because 'up and over' scaffolds are generally no longer acceptable, and in any event would a possible security risk for the Museum access for both men and materials would have to be arranged within the museum boundaries.

- Board over or otherwise protect the windows and doors on the rear elevation.

Remedial Works

- Introduce new scaffold supports to the second and third floor lifts of facing brickwork to the rear wall and carefully take down the first floor lift of displaced brickwork together with the rear balcony. Clean both the bricks / balcony elements and store on site ready for later reconstruction.
- Repeat the above procedure for the ground floor lift of the facing brickwork to the rear wall.
- Fill any voiding in the newly exposed mortar joints of the inner skin of brickwork with a lime mortar and replace any broken or missing bricks.
- Reconstruct the external skin of facing bricks using a blend of saved and new bricks (matching the existing adjacent) in lime mortar, incorporating the [cleaned & primed] ironwork of the rear balcony. The brickwork is to be tied back to the inner skin using stainless steel wall ties resin anchored in place, is to be constructed vertically following the line of the walling over, with the side edges gradually 'blended' to align with the existing adjacent wall line. The wall is then to be pointed to match the existing adjoining wall.
- Re-form the brickwork arches over the window heads as required using the existing bricks, and introduce stainless steel reinforcement in the bed joints of the band of brickwork between the top of the ground floor arches and the underside of the first floor balcony.
- Temporarily remove the coping and rack back any displaced brickwork to the rear parapet wall, before reconstructing in lime mortar so that the parapet matches the line of the wall under, incorporating one number expansion joint as detailed and directed by the engineer. Reinstall the lead flashings to the parapet guttering as directed by the engineer.
- Upon completion of the work strike the scaffold, remove the protective boarding and leave the site clean and tidy.

With regard to our providing a budget cost for the above, we confirm having approached Robert Fell Renovation, a London based company well versed in this type of work, with a view to them kindly providing you with an estimate of cost to assist in your current deliberations, which we will forward as soon as it is received.

Yours sincerely
for Hockley and Dawson

A handwritten signature in blue ink that reads "Roger Howard". The signature is written in a cursive style with a loop at the end of the word "Howard".

Roger Howard

cc. Robert Fells, Robert Fells Renovation.

RJH/17342-6

20th February 2013

Mr Kevin O'Reilly
The British Museum
Great Russell Street
London
WC1B 3DG

By post and email

Dear Kevin,

1 & 1a Montague Street, London - Displaced rear wall facing brickwork

Further to our meeting and inspection of the above last Friday morning we confirm our site observations as to the current status of the rear wall of the building, namely;

1. The scaffold propping installed along the inner face of the rear wall, together with the propping to the external first floor balcony have been designed to maintain support the internal elements of the building should for any reason the external skin of facing brickwork and said balcony become dislodged.

Thus with the main body of the building and the external balcony secure any further deterioration of the facing brickwork should only have a local impact on the rear wall.

2. Given the age of the property and the need to protect the building against the elements it would be sensible to monitor the wall and balcony on a regular, say 3 month basis.

Pragmatically we feel would be best achieved and more useful information gathered if the monitoring comprised a series of photographic surveys undertaken by one of our experienced engineers, allowing each set of photos to be compared against those taken before.

3. Whilst we understand the that museum may not be in a position to undertake major remedial works straight away, as discussed there are a couple of relatively simple exercises that can put in hand to help sustain the current status quo, namely;
 - a) Cut back the canopies of the mature trees in the rear gardens of Montague Street to reduce their summer water demand, thereby also reducing the possibility that the shrinkable clay founding stratum will desiccating and trigger any further subsidence of the rear wall.

Hockley & Dawson Consulting Engineers Limited

The Great Barn
Smithbrook Barns
Cranleigh
Surrey GU6 8LH

Telephone

01483 548784

Facsimile

01483 268765

E-mail

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Internet

www.hockleyanddawson.co.uk

- b) Advise your neighbour about the current situation and investigate the possibility of him cutting down the Buddleia currently growing against the junction of rear and party walls shared between your two properties.

NB. Care should be taken when removing any suckers from same rooted/growing in the rear wall to avoid disturbing any of the brickwork, and any voiding of mortar joints resulting from this exercise should be repointed in lime mortar to ensure the wall remains protected from the elements.

- c) Test the drainage system serving the building and repair any leaks discovered to ensure that no local soft spots are allowed to develop in the founding stratum.

The eventual reconstruction of the displaced facing brickwork will have to involve transition areas to allow the new work to bond with the unaffected walling either side of the area under consideration as well as avoid any step in the line of the wall - which would be difficult to weatherproof and may eventually give rise to dampness appearing within the building.

Thus we think it sensible to raise the subject of the eventual remedial works in your conversation with your neighbour so that preparatory arrangements as to undertaking the works can be drawn up/agreed and any ensuing disruption that may arise be kept to a minimum.

We trust this report addresses your initial queries regarding the construction and organisational implications the displaced brickwork presents to the museum, however should you require further clarification or expansion of any point please do not hesitate to contact the writer.

Yours sincerely
for Hockley and Dawson



Roger Howard



RJH/17342-7

5th September 2013

Mr Kevin O'Reilly
The British Museum
Great Russell Street
London
WC1B 3DG

By post and email

Dear Kevin,

1 & 1a Montague Street, London - Displaced rear wall facing brickwork

As requested we visited the museum this Tuesday and along with your colleague Steven Brown visually inspected the scaffold propping installed along the inner face of the rear wall and the propping to the external first floor balcony, as well as casting an eye over the general condition of the rear rooms of the building.

We report our findings as follows;

1. The scaffold propping installed appears to remain in good order and able to provide structural support to the rear room floors and first floor balcony.

NB. As a follow up to our inspection it is recommended that the nuts and bolts of a random selection of scaffold joints are checked at each floor level to ensure that they remain properly tightened. One of Andy Barrow's chaps would seem appropriate as they installed the scaffolding.

2. The building fabric around the contact faces between the scaffold and the ceilings / floors does not show any recent cracking or distress, indicating that there has not been any significant movement within the building since the propping has been installed.
3. We were advised that it is the perception of some of the museum staff using the building that the [historic] cracking in the plaster of the upper internal walls of the staircase may be getting worse. This may be the case as when tapped the plaster sounded hollow, as if it was no longer fully bonded to the wall.

If this is the case then in time the cracking would be likely to spread, however the primary cause of this distress is the failure of the plaster, not the current problem with the rear wall.

4. It was disappointing to find that the canopies of the mature trees in the rear gardens of Montague Street had not been reduced as previously recommended.

Accordingly their water demand and root growth will have had a larger impact on the stability of the founding stratum than might have been the case, and the chance to reduce the threat to the rear wall missed.

Notwithstanding the above, to reduce the threat to the affected buildings next summer it is recommended that once the ground has had a chance to [gradually] recover during the autumn rains the tree canopies are cut back.

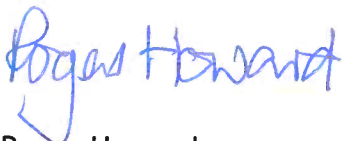
5. In similar fashion it was disappointing to note that your neighbour has not removed the Buddleia growing against the rear wall at the junction of the rear and party wall shared between the two properties.

If they could be persuaded to do so this winter it would be to your mutual benefit, always remembering that care should be taken when removing any suckers rooted/growing in the rear wall to avoid disturbing any of the brickwork. Again as before any voiding of mortar joints resulting from this exercise should be repointed in lime mortar to ensure the wall remains protected from the elements.

6. Given (4) & (5) above perhaps there may be some doubt whether the drainage system serving the building has been tested as also previously recommended?

We trust this report reassures you as to the current condition of the building and assists in your deliberations as to its future use, however should you require clarification or expansion of any point please do not hesitate to contact the writer.

Yours sincerely
for Hockley and Dawson



Roger Howard

cc. Steven Brown Esq. The British Museum.

1&1A Montague Street

Structural Investigation Plan

Curtins Ref: B063007.000

Revision: 02

Issue Date: 15 November 2016

Client Name: The British Museum

Client Address:
Great Russell Street, WC1B 3DG

Site Address:
1&1A Montague Street, WC1B



Rev	Description	Issued by	Checked	Date
01	Preliminary issue for comment	GV		15/11/2016

This report has been prepared for the sole benefit, use, and information for the client. The liability of Curtins Consulting Limited with respect to the information contained in the report will not extend to any third party.

Author	Signature	Date
Giacomo Vinci MEng MPhil Senior Engineer		15/11/2016

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1.0 Notes on the Structural Investigation Plan

The buildings at 1 and 1A Montague Street are going to be refurbished, including a number of structural alterations. There are no structural drawings of the properties available.

The purpose of the investigation is to provide detailed information on the structure of the buildings to enable the structural engineers to progress their design work.

The purpose of our site visits dated back from March 2016 to July 2016 was to review the existent situation and advice on risks relating to the occupation at that time, to collect a record of current conditions for future monitoring reference and to comment any areas where structural issues are likely to compromise the security of the stored artefacts.

We observed that the building at no.1 Montague Street has most severely been affected by foundation movements adjacent to the northern party wall and that some floors show a noticeable slope. From the simple visual walk-through it is apparent that there has been a history of structural movement and repair works in the buildings, which is typical of this class of construction. Some of the movements noted are clearly longstanding and are likely to be historic, as they have been rectified on the upper floors.

At the end of the visual survey campaign, no evidence of any movement has been detected and no changes in the cracks shape and width have been observed.

It is clear that the interiors have been quite recently painted and no cracks or defects have become visible ever since on the internal faces of the external walls. This confirms these movements are likely to be historic as previously stated.

No problems have been reported in the adjacent hotel which has been subject to a refurbishment intervention in the last years, and no underpinning was necessary to stabilise its foundations.

Nevertheless it is important to underline that the investigations which will be run in the property and specifically the one in the proximity of the building in the garden area could reveal some foundation issues which could require a deeper structural intervention as underpinning the existing foundation.

We had the possibility to study the incident occurred on 10th September 2012 when sections of the mortar render had fallen from around the North-East ground floor window (overlooking

the garden area). Further to this event, a firm of consulting engineers has inspected the distressed rear wall confirming that the left end of terrace property has suffered of a variety of problems associated with Georgian construction. From their report (dated 27th September 2012), *“The left hand half of the lower rear wall has also subsided at some stage, witness the sill of the left hand ground floor window is some 100 mm lower than that of the right hand window. However this also appears to be attended to, the panel of brickwork below said window having been rebuilt with the general coursing of the wall being maintained by the substitution of a course of bricks on edge in lieu of two courses of conventionally laid bricks”*. Another report dated 20th February 2013 confirms the purpose of the scaffold propping installed along the inner face of the rear wall and the propping to the external first floor balcony which have been designed to maintain support the internal elements of the building should for any reason the external skin of facing brickwork and said balcony become dislodged.

These information are compatible with the ones we recently received from Mr Steven Brown, Asset Strategy Manager of The British Museum, who confirmed the internal scaffold propping has been installed as a precautionary device to protect the artefacts stored and not because of any structural distress in the building. Hence they could be removed once the balcony has been properly repaired.

The strategy for the intervention on the rear balcony is to take down the first floor lift of displaced brickwork together with the rear balcony and reconstruct the external skin of facing bricks using a blend of saved and new bricks in lime mortar matching the existing adjacent and incorporating the ironwork of the rear balcony. This will require a temporary scaffolding support to the second and third floor lifts of facing brickwork to the rear wall. The brickwork installed will be tied back to the inner skin using stainless steel wall ties resin anchored in place and finally pointing the wall to match the existing adjoining wall.

Mr Steven Brown confirmed he had no notice of any damage to the neighbouring hotel wall finishes. The Buddleia which was growing against the junction of rear and party walls shared between the two properties has been removed reducing the shrinkage of the clay funding stratum during summer.

We agree with the positioning and the size of the openings proposed by BDP in their plans and schedule of architectural investigations which will cover all the structural aspects we need to proceed to the design work related to the refurbishment of the buildings and outlined in our Structural Investigation Specification drawings forwarded to the Team last 12th October 2016.

We added some more openings at lower ground floor and at ground floor levels, they are marked following the same naming convention used by BDP Architects in their 161014_Schedule of Investigations drawings.

The additional trial pit located in the Collection Display Room (1MS/1/16) and marked with LG23 is necessary to determine depth, construction and profile of the existing foundation and to investigate whether the foundation itself has been subject to any structural intervention in the past. Also at Lower Ground Floor level we added the LG24 to assess the depth, construction and profile of the existing foundation. The information is necessary because the new lift in Option 4 will require a new foundation pad or the underpinning of the existing one if found.

At Ground Floor Level we added three trial pits: the G14 will determine depth, construction and profile of existing foundations, and it will be possible to assess the structural conditions of the extrados of the barrel vault; the G15 will determine ground strata in the garden area, the exact location to be confirmed on site. In case the foundation is found to be in bad conditions or it reveals signs of distress, underpinning it will be the solution to avoid any future differential movement. The third item, named G16, will require the removal of the ceiling finishes to reveal structure and further investigate on the cracks visible on the staircase wall in the room 1MS/3/S01. These cracks have clearly occurred after the internal painting has been completed and could be potentially active, hence some sort of strengthening work could be necessary to the underside of the First Floor slab.

The wall dividing the two Collection Display Room B15 and B16 in the Lower Ground Floor level is likely to be a load-bearing one. The G01 opening will reveal the joist direction and possibly confirm this, in case the wall is load bearing the architectural proposal would require a much deeper structural intervention which will make advisable to extend the existing opening instead of the complete removal of the wall.

2.0 Notes on the Floor Loadings

The buildings at 1 and 1A Montague Street will be used as offices after the proposed refurbishment. According to the Conservation Bulletin, Issue 18, October 1992, there is no good reason for the blanket use of 5.0 KN/m² (suggested by the British Standard of Code for the “design loading for buildings” for “file rooms, filing and storage”) and that 2.5 KN/m² (“offices for general use”) is more than adequate.

High floor loadings are usually employed to give flexibility of use but there is no need to upgrade floors to make them capable of carrying loads which will never be imposed. Further,

upgrading a historic building to carry high superimposed load can easily result in major structural intervention which reflect in costs both financial and in terms of the loss of the historic fabric which may not be justified by the perceived need for high floor loadings.

The floors are far from the risk that they will be more heavily loaded over the years, the opposite will likely be true. Modern desktop computers are lighter than manual typewriters and most of the material can be easily stored on disk, paper storage is decreasing and files are rarely, if ever, stored close to the windows or in the centre of the room, but put close to the walls, where they are out of the way and do not obstruct the brighter parts of the rooms in which the occupants wish to site their desks; they are therefore usually stored in the best place for the structure, i.e. close to supports of beams and joists. Should the office be in need of a file storage systems which impose very heavy loads, these can be accommodated in special areas, called hard spots.

A huge amount of research carried out by the then Building Research Station in 1971 on 32 buildings (total floor area 160,000 m²) concluded that, except in very small areas where rooms were more like cupboards than offices, floor loadings were always below 2.5 KN/m².

So the application of an imposed load of 2.5 KN/m² will be adopted for the structural calculations involved with the refurbishment of the buildings at 1 and 1A Montague Street. A local, higher, value will be considered in case it is required by the architectural layout.

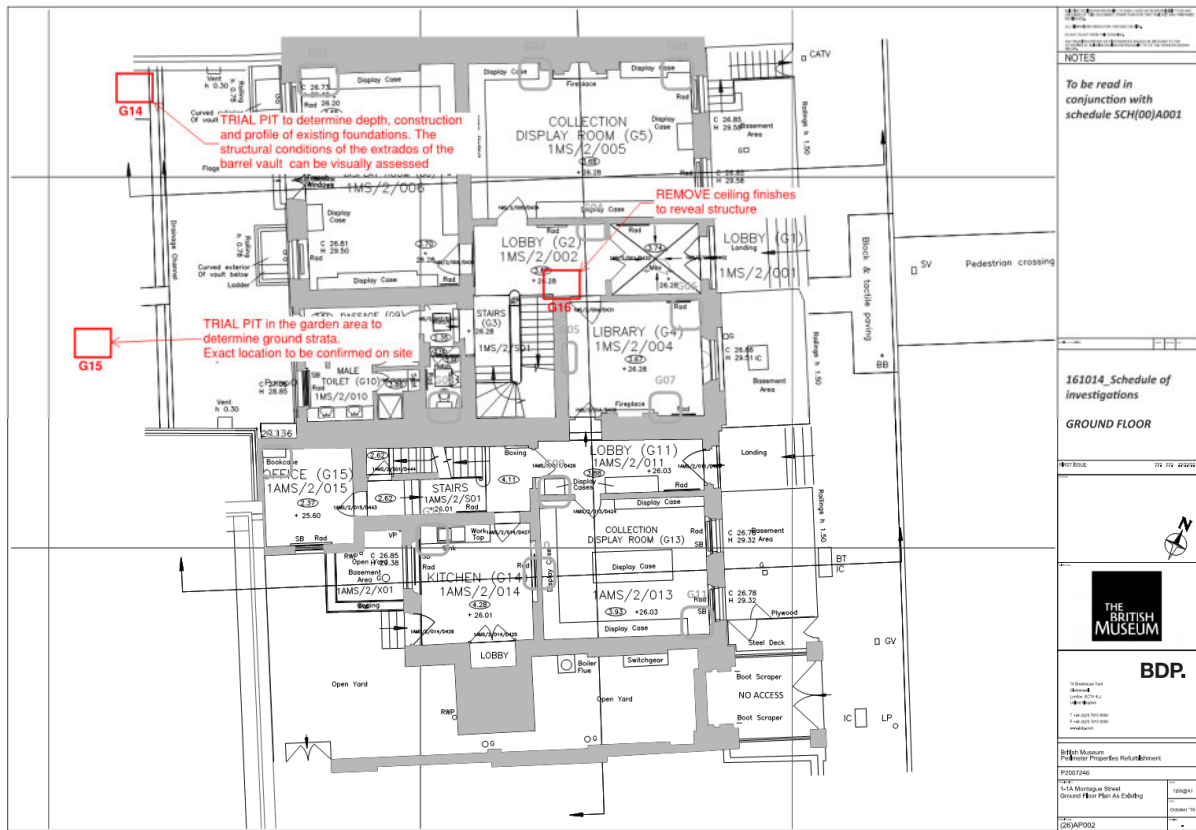


Figure 2: Ground Floor additional Trial Pits locations



Figure 3: Potential issues to be clarified after the Structural Investigations – Lower Ground Floor

Birmingham

2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol

3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff

3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas

Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh

35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal

28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Leeds

Woodside Mews
Clayton Wood Close
Leeds LS16 6QE
T. 0113 274 8509
leeds@curtins.com

Liverpool

Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London

Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester

10 Oxford Court
Bishopsgate
Manchester M2 3WQ
T. 0161 236 2394
manchester@curtins.com

Nottingham

7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com



1&1A Montague Street

Site Visit Report

Curtins Ref: B060220

Revision: 1

Issue Date: 21 March 2016

Client Name: The British Museum

Client Address: Great Russell Street
WC1B 3DG

Site Address:

1&1A Montague Street



Site visit date	11 March 2016
Attended by	Giacomo Vinci
Author	Giacomo Vinci

1. Our instructions were received from:

- This visit constitutes the first of the series of inspections instructed by email on 01 March 2016 from Mr. Steven Brown of The British Museum, requesting initial thorough visual walkthrough and monthly visual inspections for three months.
- We are instructed that as the building is in occupation the Client does not currently intend any physical investigations or detailed analysis of the structure. The intention is to monitor the conditions in order to advise of any conditions which might affect the stored materials or compromise the stability of the buildings.

2. PURPOSE OF SITE VISIT

- Review the existing condition and advice on risks relating to the current occupation.
- Collection of a record of current conditions for future, monitoring, reference.
- Comment on any areas where structural condition is likely to compromise the security of the stored artifacts.

3. OBSERVATIONS

- No.1 Montague Street is most severely affected by foundation movements adjacent to the northern party wall.
- Some cracks have been noted on the wall along the stair case at level 3, no.1 Montague Street.
- Many floors of the no.1 Montague Street building show a noticeable slope.
- A big crack in a wall is visible at level 5, no.1A Montague Street. This crack, however, does not reflect in the outer face of the wall.
- Evidence of seepage was found on the ceiling and on some walls at Level 5, no.1A Montague Street.

3. OBSERVATIONS

- A record of inspection is appended as a mark-up on floor plans and should be read in conjunction with these notes.

4. DISCUSSION

- From the simple visual walk-through it is apparent that there has been a history of structural movement and repair works in the buildings, which is typical of this class of construction. Some of the movements noted are clearly longstanding and it are likely to be historic, while others are potentially active as evidenced by the record photographs.
- Evidence suggests that No.1 is most severely affected by foundation movements adjacent to the northern party wall but that this is historic as it has been rectified on the upper floors. On the basis of a single visit we cannot confirm if this is now inactive.
- The rear elevation is affected and some historic work is evident addressing part of this. No. 1a is generally in better condition though finishes are affected by age.
- We have been told that the water ingress which affected the ceilings and the walls at Level 5, no. 1A Montague Street has been solved thanks to a recent intervention on the roof. A regular review of this area is advised to confirm that the problem is resolved.
- We did not note any evidence of recent plaster movements which might affect the cabinets or stored artifacts but note that without close inspection and sounding it is not possible to be confident of the security of plasterwork. Any areas which are vulnerable to falling plaster should be cleared or provided with protection (boarding or pillows over the cabinets).

5. RECOMMENDATIONS

- Any areas which are vulnerable to falling plaster should be cleared or provided with protection (boarding or pillows over the cabinets).
- All the cracking within the walls and the slope of the floors should be the subject of further monitoring with visual comparison to the record provided in this inspection.
- Any site visit should include a thorough visual check of both the buildings to confirm if new cracks/defects become visible.

6. SUMMARY

- A visual inspect of the properties has been made a record prepared on the floor plans appended. This summary will be used as a reference for future inspections.
- Evidence of historic movements was noted. On the basis of a single visit it is not possible to identify if any movements are currently active.
- No evidence of movement sufficient to cause concern as to immediate structural stability was noted.
- It was not practical to closely inspect or sound plasterwork which may de-bond and we have therefore recommended that any cabinets or stored items which may be vulnerable are provided with protection (boards and cushions).
- Next site visit due on Wednesday, 6 April 2016.

7. INFORMATION REQUIRED

- None identified.

8. HEALTH AND SAFETY

- No structure related items noted in respect of current service. Areas currently closed off should remain so.
- Both the buildings are closed to the public.

SIGNATORY

This report has been prepared on the basis of visual observations and without the benefit of any site investigations or monitoring, nor any tests on services. Our report is provided for the sole use of the named client and is confidential to the client and his professional advisors. All parts of the property that were covered, unexposed or inaccessible were not inspected and therefore we are unable to report that such parts are free from defects.

Name

Giacomo Vinci

Signature



Date

21 March 2016

Birmingham

2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol

3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff

3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas

Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh

35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal

28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Leeds

Woodside Mews
Clayton Wood Close
Leeds LS16 6QE
T. 0113 274 8509
leeds@curtins.com

Liverpool

Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London

Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester

10 Oxford Court
Bishopsgate
Manchester M2 3WQ
T. 0161 236 2394
manchester@curtins.com

Nottingham

7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com



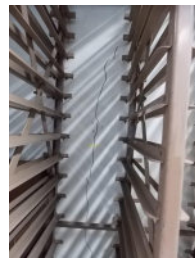
White Hall



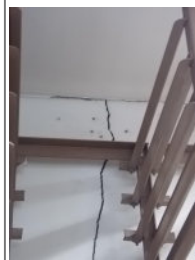
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003



004



005



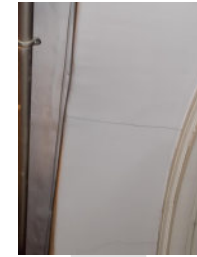
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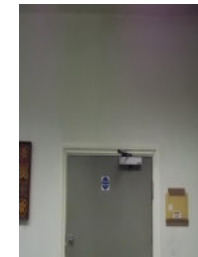
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011



010



007



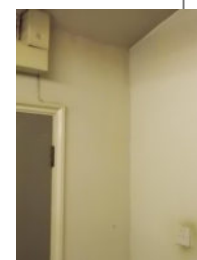
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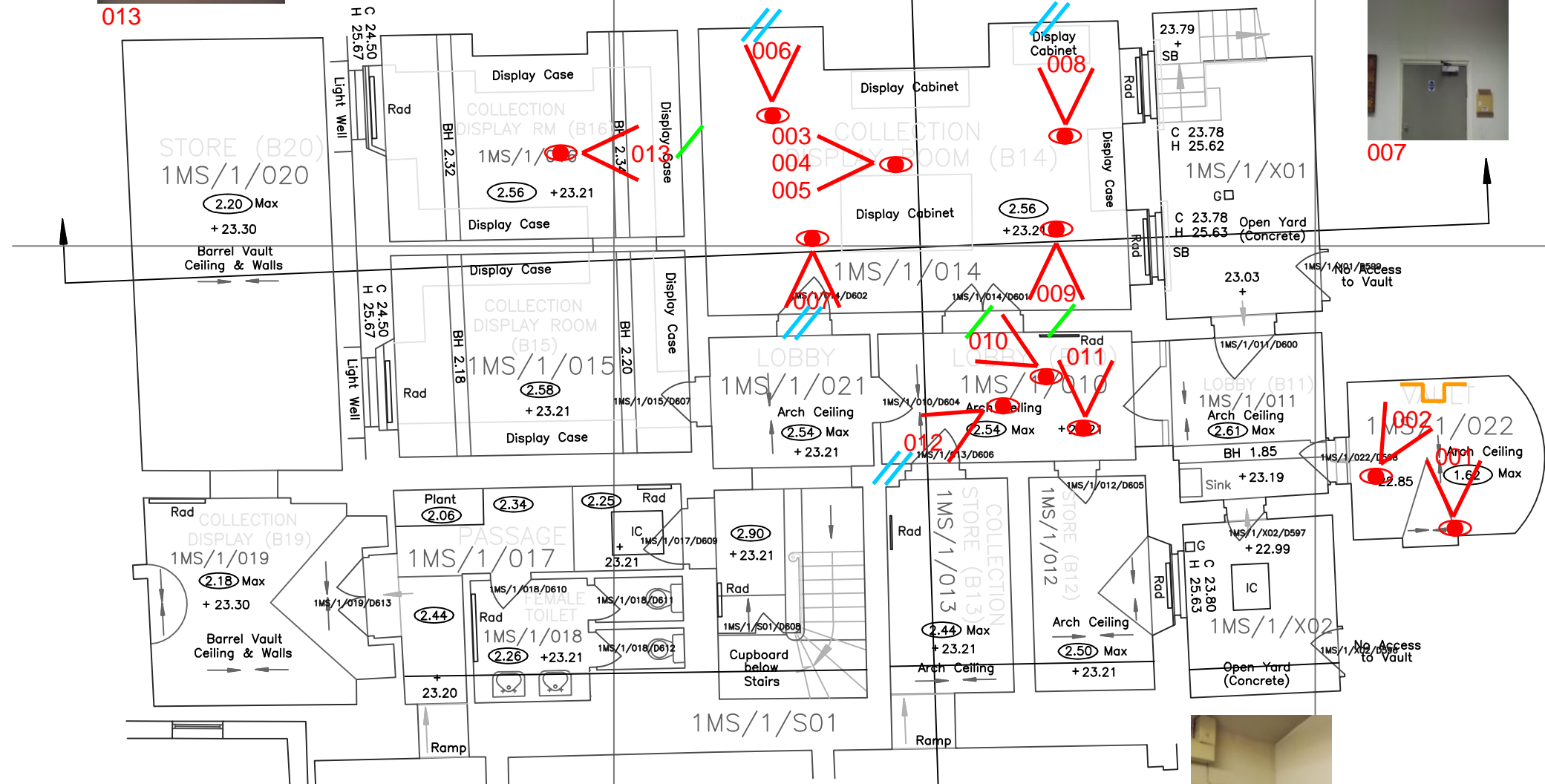
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012



LEGEND

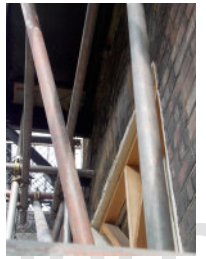
- bowing
- fine crack (reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down (percentage)

Rev:	Description:	Date:	By:	Chkd:
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 40 Compton Street, London, EC1V 0BD
 t: 020 7324 2240 f: 020 7324 2241
 e: london@curtins.com www.curtins.com

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Status: REPORT				
Project: THE BRITISH MUSEUM 1 MONTAGUE STREET				
Drg Title: LEVEL 1 March 11th, 2016 - site visit				
Scale:	Size:	First Issue:	Drawn:	Checked:
1:	A3	22.03.2016	GV	WH
Drg No: B0602220 - 1 - 01MS01				Rev:
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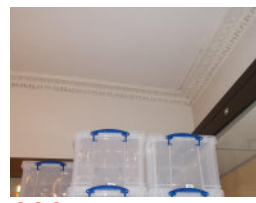
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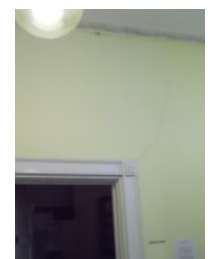
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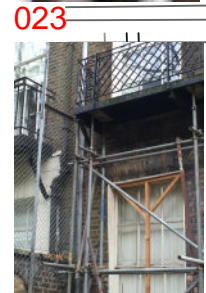
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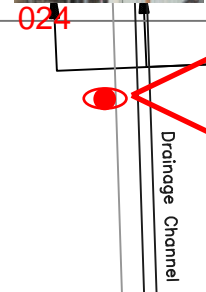
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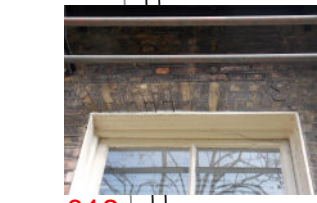
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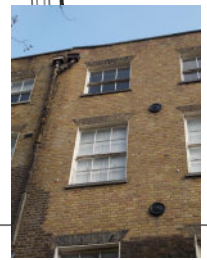
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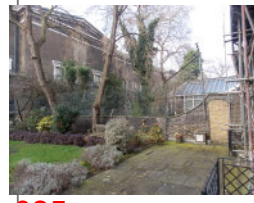
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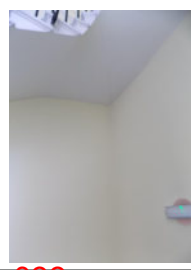
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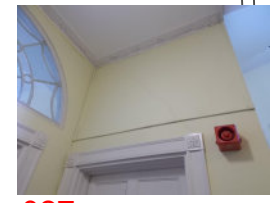
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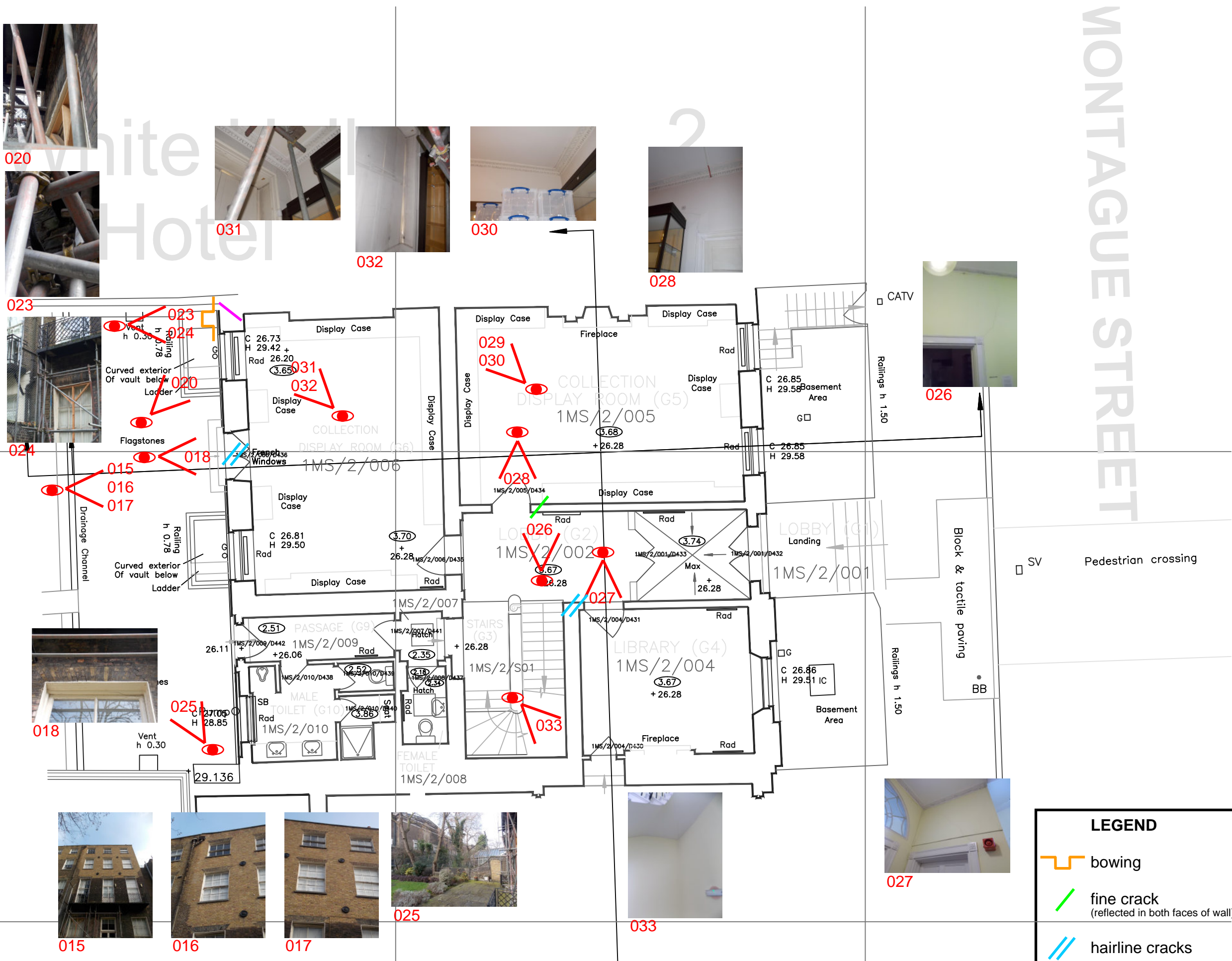


033



027

MONTAGUE STREET



LEGEND

- bowing
- fine crack (reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down (percentage)

Rev:	Description:	Date:	By:	Chkd:
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REPORT

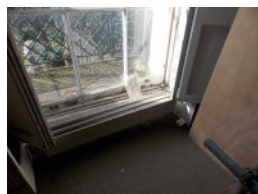
Project: THE BRITISH MUSEUM
1 MONTAGUE STREET

Drwg Title: LEVEL 2
March 11th, 2016 - site visit

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Drwg No: B0602220 - 1 - 02MS01

White Hall Hotel 2



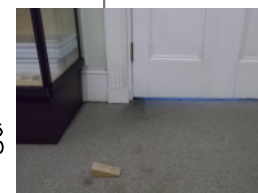
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052



045



042



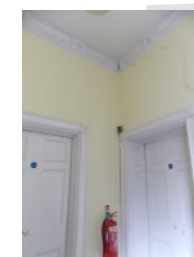
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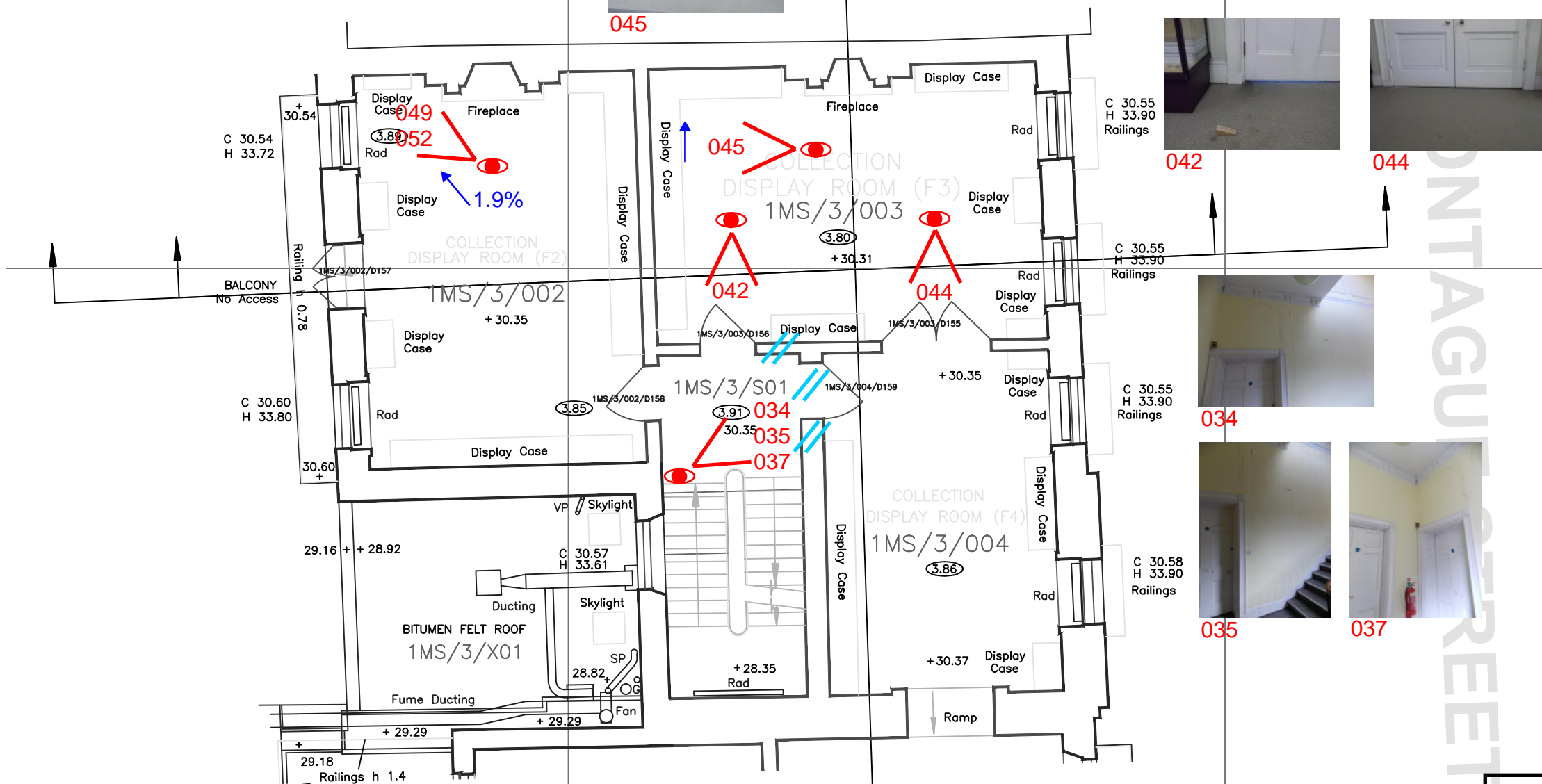
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035



037



LEGEND

- bowing
- fine crack (reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down (percentage)

Rev:	Description:	Date:	By:	Chkd:
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Status: **REPORT**

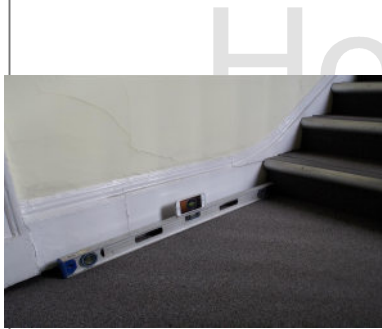
Project: **THE BRITISH MUSEUM
1 MONTAGUE STREET**

Dwg Title: **LEVEL 3
March 11th, 2016 - site visit**

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1:	A3	22.03.2016	GV	WH

Dwg No: **B0602220 - 1 - 03MS01** Rev: /

White Hall



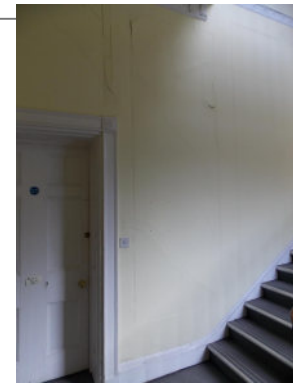
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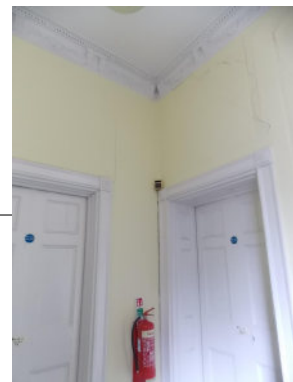
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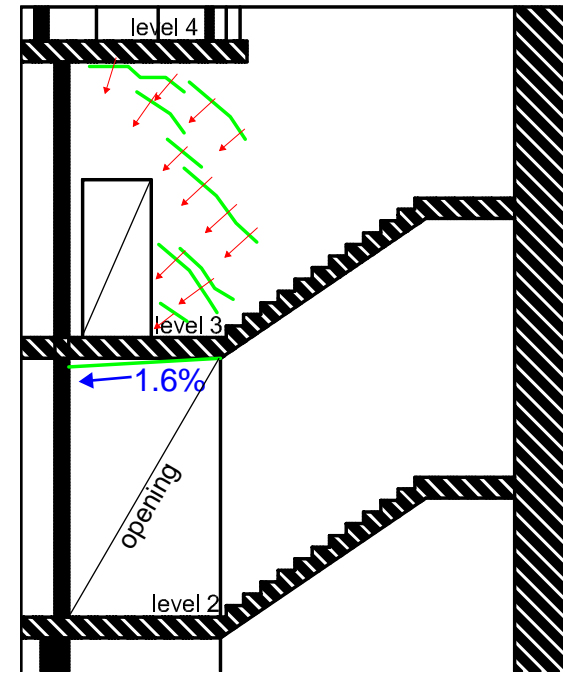
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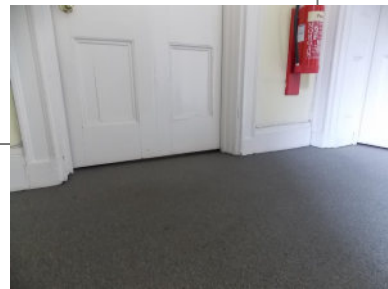
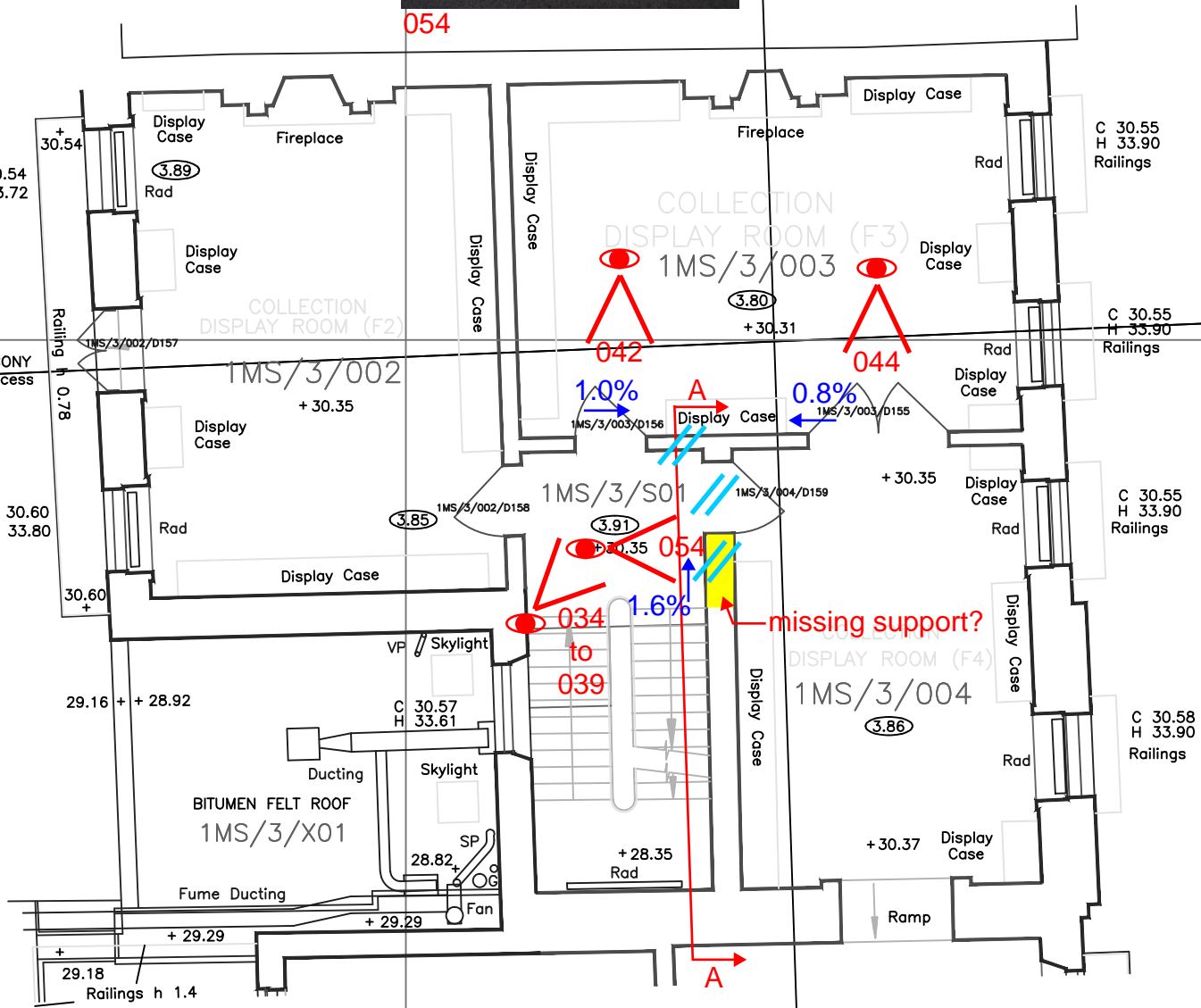
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037



SECTION A-A



038



039

LEGEND

- bowing
- fine crack (reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down (percentage)

Rev:	Description:	Date:	By:	Chkd:
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REPORT				
Project: THE BRITISH MUSEUM 1 MONTAGUE STREET				
Drg Title: LEVEL 3 March 11th, 2016 - site visit Wall damage assessment				
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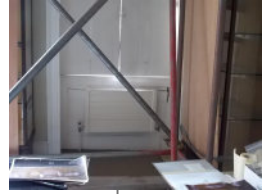
White Hall Hotel 2



056



060



061



066



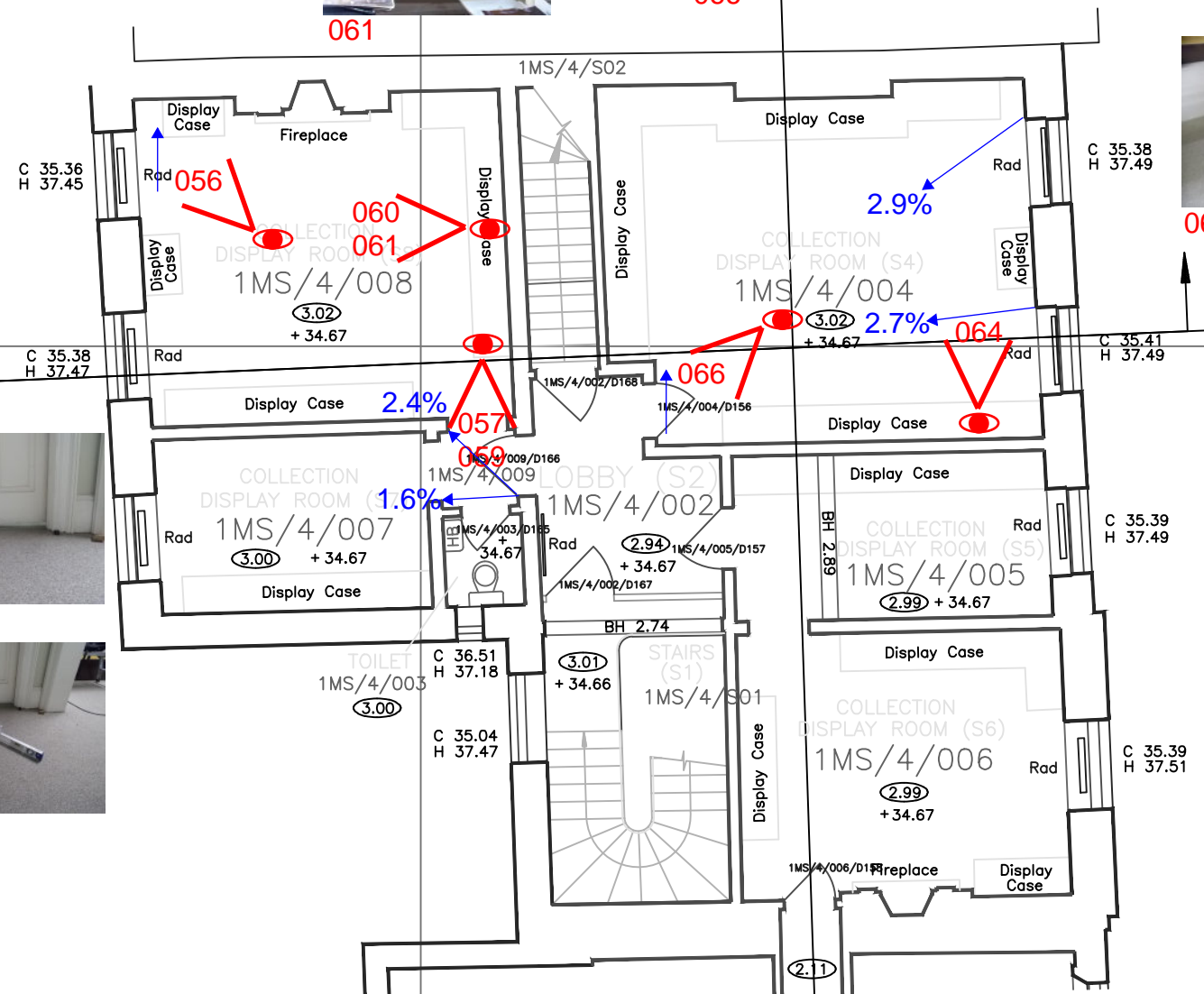
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057



059



MONTAGUE STREET

LEGEND

- bowing
- fine crack (reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down (percentage)

Rev:	Description:	Date:	By:	Chkd:
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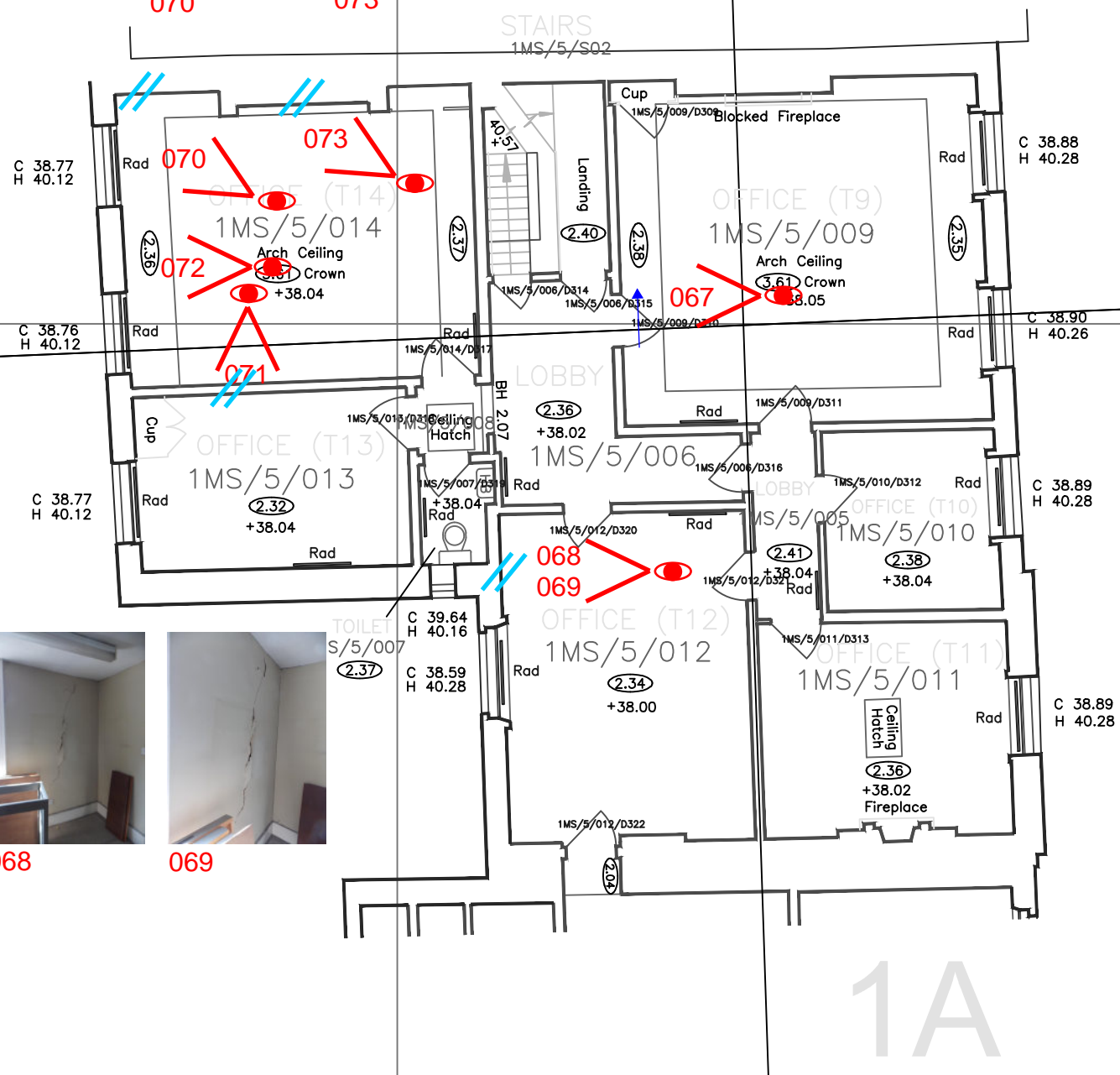
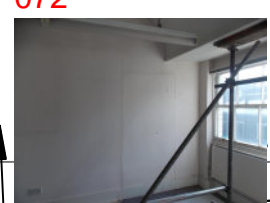
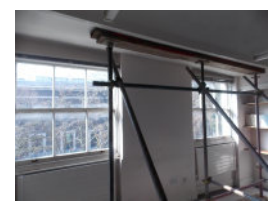
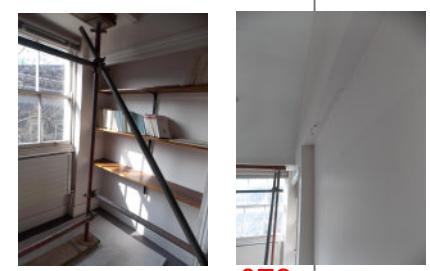
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 t: 020 7324 2240 f: 020 7324 2241
 e: london@curtins.com www.curtins.com

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REPORT				
Project: THE BRITISH MUSEUM 1 MONTAGUE STREET				
Drg Title: LEVEL 4 March 11th, 2016 - site visit				
Scale:	Size:	First Issue:	Drawn:	Checked:
1:	A3	22.03.2016	GV	WH
Drg No: B0602220 - 1 - 04MS01				Rev: /

White Hall Hotel 2

MONTAGUE STREET



LEGEND

- bowing
- fine crack (reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down (percentage)

Rev:	Description:	Date:	By:	Chkd:
-	-	-	-	-



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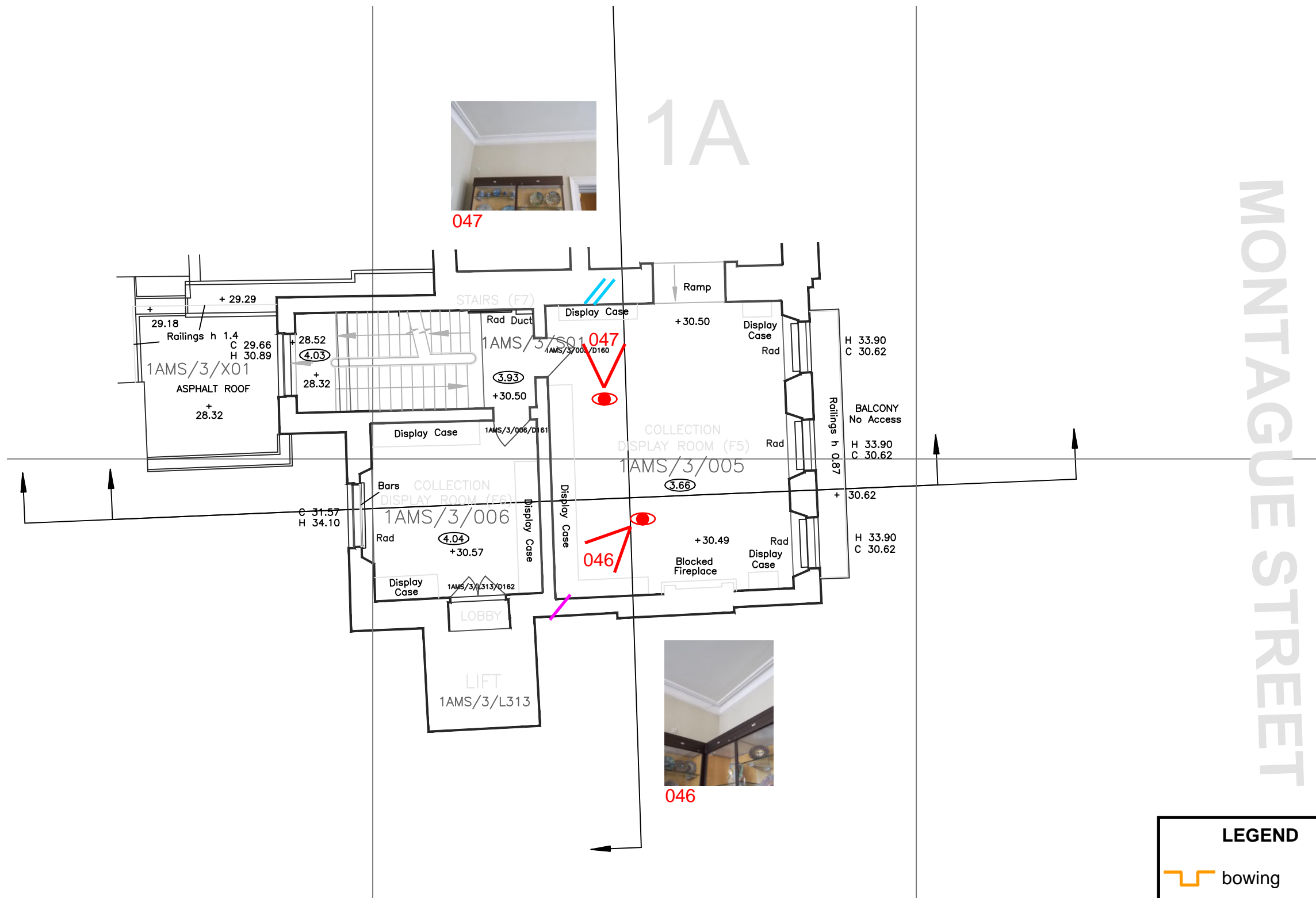
REPORT

Project: THE BRITISH MUSEUM
1 MONTAGUE STREET

Drwg Title: LEVEL 5
March 11th, 2016 - site visit

Scale:	Size:	First Issue:	Drawn:	Checked:
1:	A3	22.03.2016	GV	WH

Drwg No: B0602220 - 1 - 05MS01
Rev: /



Rev:	Description:	Date:	By:	Chkd:
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 e: london@curtins.com www.curtins.com

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Status:	REPORT			
Project:	THE BRITISH MUSEUM 1A MONTAGUE STREET			
Dwg Title:	LEVEL 3 March 11th, 2016 - site visit			
Scale:	Size:	First Issue:	Drawn:	Checked:
1:	A3	22.03.2016	GV	WH
Dwg No:	B0602220 - 1 - 03MS01A			Rev:
				/

LEGEND

- bowing
- fine crack (reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down (percentage)



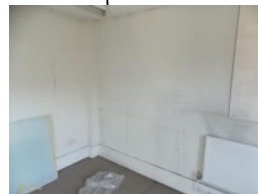
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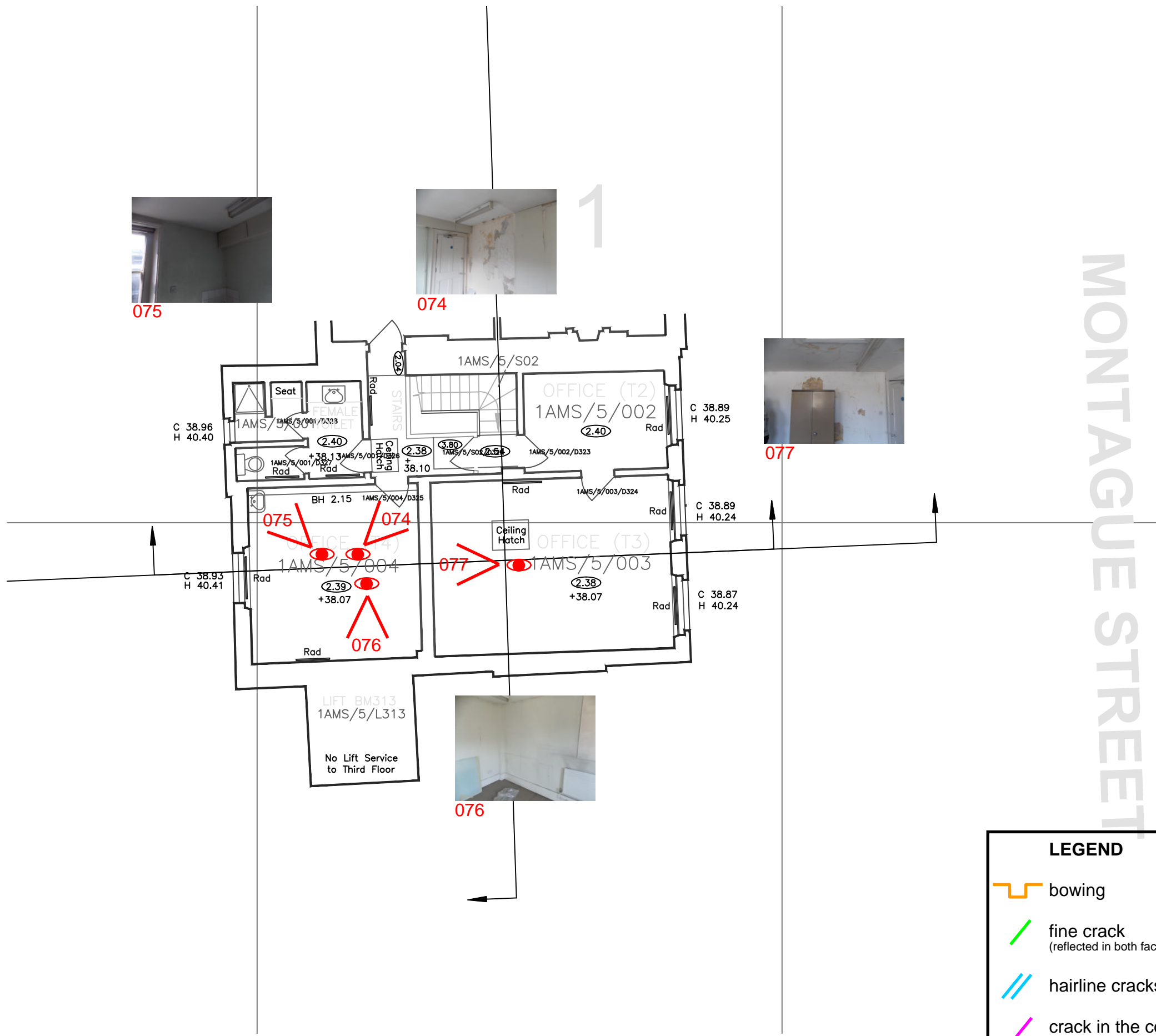
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077



076



MONTAGUE STREET

LEGEND

- bowing
- fine crack
(reflected in both faces of wall)
- hairline cracks
- crack in the corner
- slope down
(percentage)

-	-	-	-
Rev:	Description:	Date:	By: Chkd:
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Status: REPORT			
Project: THE BRITISH MUSEUM 1A Montague Street			
Drg Title: Level 5 March 11th 2016 site visit			
Scale:	Size:	First Issue:	Drawn: Checked:
1:	A3	22.03.2016	GV WH
Drg No: B0602220 - 1 - 05MS01A			Rev: /

1&1A Montague Street

Site Visit Report

Curtins Ref: B060220

Revision: 1

Issue Date: 08 April 2016

Client Name: The British Museum

Client Address: Great Russell Street
WC1B 3DG

Site Address:

1&1A Montague Street



Site visit date	07 April 2016
Attended by	Giacomo Vinci
Author	Giacomo Vinci

1. Our instructions were received from:

- This visit constitutes the second of the series of inspections instructed by email on 01 March 2016 from Mr. Steven Brown of The British Museum, requesting initial thorough visual walkthrough and monthly visual inspections for three months.
- We are instructed that as the building is in occupation the Client does not currently intend any physical investigations or detailed analysis of the structure. The intention is to monitor the situation in order to advise of any conditions which might affect the stored materials or compromise the stability of the buildings.

2. PURPOSE OF SITE VISIT

- Review the existing condition to check if there are any changes in the defects which could have occurred since the first site visit.
- Collection of a record of current conditions for future, monitoring, reference.

3. OBSERVATIONS

- Both the buildings have been inspected and a whole new set of photos have been taken to make a visual comparison with the ones related to the first visit to observe any possible movement.

4. DISCUSSION

- No changes have been observed in the cracks shape and width since the first site visit. Refer to the floor plans and the site visit report related to the first site visit.

5. RECOMMENDATIONS

- Any areas which are vulnerable to falling plaster should be cleared or provided with protection (boarding or pillows over the cabinets).

5. RECOMMENDATIONS

- All the cracking within the walls and the slope of the floors should be the subject of further monitoring with visual comparison to the record provided in this inspection.
- Any site visit should include a thorough visual check of both the buildings to confirm if new cracks/defects become visible.

6. SUMMARY

- No evidence of movement sufficient to cause concern as to immediate structural stability was noted.
- It was not practical to closely inspect or sound plasterwork which may de-bond and we have therefore recommended that any cabinets or stored items which may be vulnerable are provided with protection (boards and cushions).
- Next site visit due on Wednesday, 4 May 2016.
- The use of a level would help compare the results registered in the first site visit. Further, the use of a caliper will give a reading of the cracks width observed at Level 1, 1 Montague Street, and can be used as a reference for future investigations.

7. INFORMATION REQUIRED

- None identified.

8. HEALTH AND SAFETY

- No structure related items noted in respect of current service. Areas currently closed off should remain so.
- Both the buildings are closed to the public.

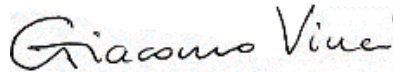
SIGNATORY

This report has been prepared on the basis of visual observations and without the benefit of any site investigations or monitoring, nor any tests on services. Our report is provided for the sole use of the named client and is confidential to the client and his professional advisors. All parts of the property that were covered, unexposed or inaccessible were not inspected and therefore we are unable to report that such parts are free from defects.

Name

Giacomo Vinci

Signature



Date

08 April 2016

Birmingham

2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol

3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff

3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas

Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh

35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal

28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Leeds

Woodside Mews
Clayton Wood Close
Leeds LS16 6QE
T. 0113 274 8509
leeds@curtins.com

Liverpool

Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London

Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester

10 Oxford Court
Bishopsgate
Manchester M2 3WQ
T. 0161 236 2394
manchester@curtins.com

Nottingham

7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com



1&1A Montague Street

Site Visits - Final Report

Curtins Ref: B060220

Revision: 1

Issue Date: 27 May 2016

Client Name: The British Museum

Client Address: Great Russell Street
WC1B 3DG

Site Address:

1&1A Montague Street



Site visit dates	04 February 2016 11 March 2016 07 April 2016 04 May 2016
Attended by	Wayne Hardy / Giacomo Vinci
Author	Giacomo Vinci

1. OUR INSTRUCTIONS WERE RECEIVED FROM:

- The series of inspections have been instructed by email on 01 March 2016 from Mr. Steven Brown of The British Museum, requesting initial thorough visual walkthrough and monthly visual inspections for three months.
- We are instructed that as the building is in occupation, the Client does not currently intend any physical investigations or detailed analysis of the structure. The intention is to monitor the situation in order to advise of any conditions which might affect the stored materials or compromise the stability of the buildings.

2. PURPOSE OF SITE VISITS

- Review the existing condition and advice on risks relating to the current occupation.
- Collection of a record of current conditions for future, monitoring, reference.
- Comment on any areas where structural condition is likely to compromise the security of the stored artifacts.

3. OBSERVATIONS

- No.1 Montague Street is most severely affected by foundation movements adjacent to the northern party wall.
- Some cracks have been noted on the wall along the stair case at level 3, no.1 Montague Street. They have been subject to further investigation shown in an additional drawing.
- Many floors of the no.1 Montague Street building show a noticeable slope.
- A big crack in a wall is visible at level 5, no.1A Montague Street.

3. OBSERVATIONS

- Evidence of seepage was found on the ceiling and on some walls at Level 5, no.1A Montague Street.

4. DISCUSSION

- No changes have been observed in the cracks shape and width since the first site visit. Refer to the floor plans and the site visit report related to the first site visit.
- A record of inspection is appended as a mark-up on floor plans and should be read in conjunction with these notes.
- The cracks noted in the wall along the staircase of the building at 1 Montague Street have been subject to further investigation shown in an additional drawing. From the analysis of the shape and orientation of the cracks and after a confirm checking the floor plans it seems there's a lack of support from the level 2 wall which possibly has been reduced in size at some time during the building life. Although this set of cracks is subsequent to the painting of the wall (which is not possible to set a date for), they do not appear to be developing at the moment.
- From the simple visual walk-through it is apparent that there has been a history of structural movement and repair works in the buildings, which is typical of this class of construction.
- Evidence suggests the No.1 foundation movements adjacent to the northern party wall to be historic as it has been rectified on the upper floors. The rear elevation is affected and some historic work is evident addressing part of this. No. 1a is generally in better condition though finishes are affected by age.
- We have been told that the water ingress which affected the ceilings and the walls at Level 5, no. 1A Montague Street has been solved thanks to a recent intervention on the roof. A regular review of this area has confirmed that the problem is resolved.
- We did not note any evidence of recent plaster movements which might affect the cabinets or stored artifacts but note that without close inspection and sounding it is not possible to be confident of the security of plasterwork.
- The crack on the wall at level 5, no. 1A Montague Street does not reflect in the outer face of the wall. A more detailed analysis of the crack would require the removal of the plaster which is beyond the purposes of the site visits.

5. RECOMMENDATIONS

- Any areas which are vulnerable to falling plaster should be cleared or provided with protection (boarding or pillows over the cabinets).
- All the cracking within the walls and the slope of the floors should be the subject of further monitoring with visual comparison to the record provided in this inspection.

6. SUMMARY

- No evidence of movement sufficient to cause concern as to immediate structural stability was noted.
- It was not practical to closely inspect or sound plasterwork which may de-bond and we have therefore recommended that any cabinets or stored items which may be vulnerable are provided with protection (boards and cushions).
- The use of a caliper gives a reading of the cracks width observed at Level 1, 1 Montague Street, and can be used as a reference for future investigations.

7. INFORMATION REQUIRED

- None identified.

8. HEALTH AND SAFETY

- No structure related items noted in respect of current service. Areas currently closed off should remain so.
- Both the buildings are closed to the public.

SIGNATORY

This report has been prepared on the basis of visual observations and without the benefit of any site investigations or monitoring, nor any tests on services. Our report is provided for the sole use of the named client and is confidential to the client and his professional advisors. All parts of the property that were covered, unexposed or inaccessible were not inspected and therefore we are unable to report that such parts are free from defects.

Name

Giacomo Vinci

Signature



Date

27 May 2016

Birmingham

2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol

3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff

3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas

Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh

35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal

28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Leeds

Woodside Mews
Clayton Wood Close
Leeds LS16 6QE
T. 0113 274 8509
leeds@curtins.com

Liverpool

Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London

Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester

10 Oxford Court
Bishopsgate
Manchester M2 3WQ
T. 0161 236 2394
manchester@curtins.com

Nottingham

7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com



1&1A Montague Street

Site Visit Report

Curtins Ref: B060220

Revision: 1

Issue Date: 04 July 2016

Client Name: The British Museum

Client Address: Great Russell Street
WC1B 3DG

Site Address:

1&1A Montague Street



Site visit date	29 June 2016
Attended by	Giacomo Vinci
Author	Giacomo Vinci

1. Our instructions were received from:

- This visit constitutes the second of the series of inspections instructed by email on 22 June 2016 from Mr. Steven Brown of The British Museum, requesting monthly visual inspections for six months.
- We are instructed that as the building is in occupation the Client does not currently intend any physical investigations or detailed analysis of the structure. The intention is to monitor the situation in order to advise of any conditions which might affect the stored materials or compromise the stability of the buildings.

2. PURPOSE OF SITE VISIT

- Review the existing condition to check if there are any changes in the defects which could have occurred since the first site visit.
- Collection of a record of current conditions for future, monitoring, reference.

3. OBSERVATIONS

- Both the buildings have been inspected and a whole new set of photos have been taken to make a visual comparison with the ones related to the past visits to observe any possible movement.

4. DISCUSSION

- No changes have been observed in the cracks shape and width. Refer to the floor plans and the site visit report related to the first site visit.
- The fine crack visible in the wall dividing the Rooms 1MS/016 (Collection Display Room B16) and 1MS/1/014 (Collection Display Room B14) has been measured using the caliper and the steel monitoring discs placed there during a previous survey campaign. No evidence of any movement has been detected since our last site visit and measurement.

5. RECOMMENDATIONS

- Any areas which are vulnerable to falling plaster should be cleared or provided with protection (boarding or pillows over the cabinets).
- All the cracking within the walls and the slope of the floors should be the subject of further monitoring with visual comparison to the record provided in this inspection.
- Any site visit should include a thorough visual check of both the buildings to confirm if new cracks/defects become visible.

6. SUMMARY

- No evidence of movement sufficient to cause concern as to immediate structural stability was noted.
- It was not practical to closely inspect or sound plasterwork which may de-bond and we have therefore recommended that any cabinets or stored items which may be vulnerable are provided with protection (boards and cushions).
- Next site visit due on Wednesday, 27 July 2016.

7. INFORMATION REQUIRED

- None identified.

8. HEALTH AND SAFETY

- No structure related items noted in respect of current service. Areas currently closed off should remain so.
- Both the buildings are closed to the public.

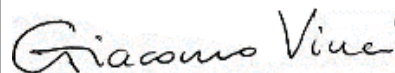
SIGNATORY

This report has been prepared on the basis of visual observations and without the benefit of any site investigations or monitoring, nor any tests on services. Our report is provided for the sole use of the named client and is confidential to the client and his professional advisors. All parts of the property that were covered, unexposed or inaccessible were not inspected and therefore we are unable to report that such parts are free from defects.

Name

Giacomo Vinci

Signature



Date

04 July 2016

Birmingham

2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol

3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff

3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
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Douglas

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IM1 2AZ
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douglas@curtins.com

Edinburgh

35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal

28 Lower Street
Kendal
Cumbria LA9 4DH
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kendal@curtins.com

Leeds

Woodside Mews
Clayton Wood Close
Leeds LS16 6QE
T. 0113 274 8509
leeds@curtins.com

Liverpool

Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London

Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester

10 Oxford Court
Bishopsgate
Manchester M2 3WQ
T. 0161 236 2394
manchester@curtins.com

Nottingham

7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com



1&1A Montague Street

Site Visit Report

Curtins Ref: B060220

Revision: 1

Issue Date: 11 August 2016

Client Name: The British Museum

Client Address: Great Russell Street
WC1B 3DG

Site Address:

1&1A Montague Street



Site visit date	27 July 2016
Attended by	Giacomo Vinci
Author	Giacomo Vinci

1. Our instructions were received from:

- This visit constitutes the second of the series of inspections instructed by email on 22nd June 2016 from Mr. Steven Brown of The British Museum, requesting monthly visual inspections for six months.
- We are instructed that as the building is in occupation, the Client does not currently intend any physical investigations or detailed analysis of the structure. The intention is to monitor the situation in order to advise of any conditions which might affect the stored materials or compromise the stability of the buildings.

2. PURPOSE OF SITE VISIT

- Review the existing condition to check if there are any changes in the defects which could have occurred since the first site visit.
- Collection of a record of current conditions for future, monitoring, reference.

3. OBSERVATIONS

- Both the buildings have been inspected and a whole new set of photos have been taken to make a visual comparison with the ones related to the past visits to observe any possible movement.
- The fine crack visible in the wall dividing the Rooms 1MS/016 (Collection Display Room B16) and 1MS/1/014 (Collection Display Room B14) has been measured using the caliper and the steel monitoring discs placed there during a previous survey campaign not run by Curtins Consulting. A new set of discs have been found on the wall after the removal of some drawers and two additional measurements (reference numbers 4 and 5) have been added to the set of the first three ones.
- Due to heavy rainfalls in the last weeks some water ingress has been observed on the walls and the ceilings of the last floor.

4. DISCUSSION

- No changes have been observed in the cracks shape and width. Refer to the floor plans and the site visit report related to the first site visit.
- No evidence of any movement has been detected since our last site visit and measurement of the fine crack in the wall dividing the room 1MS/016 (Collection Display Rook B16) and 1MS/1/014 (Collection Display Room B14). From the next visit on the data will be populated by two additional measurements referred to the two discs found. We're collecting the whole set data to evaluate the statistical effectiveness of the measurements.
- The recent water ingress is under supervision of another Consultancy. There is no evidence of any structural distress caused by this issue.

5. RECOMMENDATIONS

- Any areas which are vulnerable to falling plaster should be cleared or provided with protection (boarding or pillows over the cabinets).
- All the cracking within the walls and the slope of the floors should be the subject of further monitoring with visual comparison to the record provided in this inspection.
- Any site visit should include a thorough visual check of both the buildings to confirm if new cracks/defects become visible.

6. SUMMARY

- No evidence of movement sufficient to cause concern as to immediate structural stability was noted.
- It was not practical to closely inspect or sound plasterwork which may de-bond and we have therefore recommended that any cabinets or stored items which may be vulnerable are provided with protection (boards and cushions).
- Next site visit due on Wednesday, 31st August 2016.

7. INFORMATION REQUIRED

- None identified.

8. HEALTH AND SAFETY

- No structure related items noted in respect of current service. Areas currently closed off should remain so.
- Both the buildings are closed to the public.

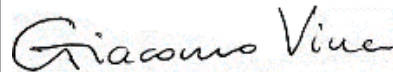
SIGNATORY

This report has been prepared on the basis of visual observations and without the benefit of any site investigations or monitoring, nor any tests on services. Our report is provided for the sole use of the named client and is confidential to the client and his professional advisors. All parts of the property that were covered, unexposed or inaccessible were not inspected and therefore we are unable to report that such parts are free from defects.

Name

Giacomo Vinci

Signature



Date

11 August 2016

Birmingham

2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol

3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff

3 Cwrt-y-Parc
Earlswood Road
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CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas

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Douglas Isle of Man
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douglas@curtins.com

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Kendal

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Riverside Drive
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london@curtins.com

Manchester

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Bishopsgate
Manchester M2 3WQ
T. 0161 236 2394
manchester@curtins.com

Nottingham

7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com



Curtins Ref: 063007

Project Name: 1 & 1A Montague Street

Issue Date: 26 April 2017

Revision: first issue

Introduction

This statement relates to the historic settlement that is evident in the north west corner of 1 and 1A Montague Street.

Description of the Existing Structure

These are Georgian terraced properties considered to be typical of their age and type, that comprise external loadbearing masonry walls; internal loadbearing masonry walls at the lower levels and loadbearing timber stud walls at the upper levels; and suspended floors of timber construction. The buildings have been modified heavily since originally built. Further information is included within Hockley & Dawson's letter reports issued to The British Museum, dated 27 September 2012 and 23 November 2012.

Visual Observations

Curtins have been provided with photographs dating back to 2012, a study of which reveals that there does not appear to have been any significant deterioration, since then, of the cracking or distortions evident in the rear corner of the property adjacent to the party wall.

Curtins were also appointed to visit the site throughout 2016 and during that period no further movement was observed.

Discussion

Whilst the cause of the cracking observed is not obvious, it is historic, not new. We have been informed that the adjoining owner has also not reported any new cracking or deterioration. Consequently, the cracking and distortions are now considered to be longstanding and non-progressive, or at least not significantly progressive, and as such have reached a stable equilibrium.

Summary

There are distortions that can be addressed. We are of the opinion that substructure works, such as underpinning, is not warranted and believe that such works would be likely to cause further movement as a result of the construction. The proposed works to replace the rear façade at first floor level will improve the structural integrity by tying the locally rebuilt façade through to the floor structure.

Signatory

This report has been prepared on the basis of visual observations and with the benefit of limited site investigations, but no actual crack or level monitoring. Our report is provided for the sole use of the named client and is confidential to the client and his professional advisors.



Neill C Duke
BSc(Hons) CEng MICE
Curtins Consulting Ltd