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16 September 2015

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CONTRACT NO. 5367
REPORT ON STRUCTURAL DEFECTS AT
22 NEAL STREET

BRIEF

Further to your instructions we visited the above premises on 10 September 2015 in order to carry out a visual inspection of the external walls.

DESCRIPTION

The property is a three storey building (plus basement) purpose-built pub. Internally, floors are supported by beams on columns. Internally, floors are supported by beams and columns. Exteranll, the masonry walls support the floors and ends of beams. Lintels appear to be stone. Mullions are masonry.

OBSERVATION

Access was via an external scaffold.

1st Floor

1. Recent repairs to cracks above ground floor windows. See photo 1

2. As item 1 but with open perpend. See photo 2
3. Vertical crack at the base of mullion. The crack continues through the stone margin down to the brickwork above the lintel. See photo 3

2nd Floor

4. Diagonal and vertical cracking beneath parapet.

   Lifting of parapet.

   Displacement of arch

   Water ingress beneath coping

   See photo 4
5. Significant outward displacement of wall at end of parapet. See photo 5
6. Previous crack repairs to replace open perpends and bed joints. One perpend still left open. See photo 6
7. As item 5, but end cut brick has fallen off. See photo 7

DISCUSSION

The defects listed above are significant enough to require repair.

The coping to the parapet has moved due to thermal expansion. There are no expansion joints in the coping, thus the outward thermal movement is maximum at the ends of the parapets. The movement at this property has been sufficient to displace bricks at the ends. This is potentially dangerous. Furthermore the lifting of the coping due to the thermal movements has caused gaps to appear, allowing water ingress. This water is damaging the brickwork and may be causing damage to the internal elements of structure also.

There is evidence of overloading to the masonry mullions. The fact that this cracking also extends down into the spandrel panels which could also indicate corrosion of steel beams supported by the walls. Further intrusive investigations are necessary. Meanwhile, the lintels either side of the mullions should be temporarily propped.

OUTLINE SCHEDULE OF WORKS

A. COPING

1. Carefully remove and set-aside for re-use full length of coping stones on both parapets.
2. Carefully remove mortar on top of parapet.
3. Lay mortar bed.
4. Lay 1st course of DPC. (Type to be suitable to resist tension, e.g. 2 courses slate or creasing tiles)
5. Lay mortar bed.
6. Replace coping stones. Leave 30mm gap every 3m.
7. In location of gap carefully remove top mortar bed.
8. Inset suitable silicone mastic into gap to form expansion joint.

B. MULLIONS

101. Place acrow prop either side of mullion at 1st floor (elevation facing Shelton St.) ensure props have timber spreaders /packers top and bottom. DO NOT OVER TIGHTEN.
102. Carefully cut out brickwork beneath mullion to expose end of steel beam.

103. (Provisional)

Remove all loose rust (wire brush or similar).

Paint beam end suitable rust inhibitor.

Wrap end of beam with layers of DPM.

104. Rebuild masonry and make good.

105. Carefully takedown masonry mullion after removing and setting aside windows.

106. Set aside as many cleared bricks as possible for later re-use.

107. Insert galvanised 60mm diameter galvanised Circular Hollow Section Post on centre line of mullion. CHS to have base plate top and bottom.

108. Resin bolt (8ø) top and bottom.

109. Shot-file brick ties to CHS.

110. Rebuild mullion cutting bricks carefully around post. Re-use original bricks where possible.

111. Using metal detector establish pressure, or otherwise, of steel beams immediately above and below all mullions. If beams are found repeat items 101-110.

Marek Glowinski B.Sc. C.Eng. M.I. Struct. E. M.Cons.E

PHOTO 1

PHOTO 2

PHOT0 3

PHOTO 4

PHOTO 5

PHOTO 6

PHOTO 7

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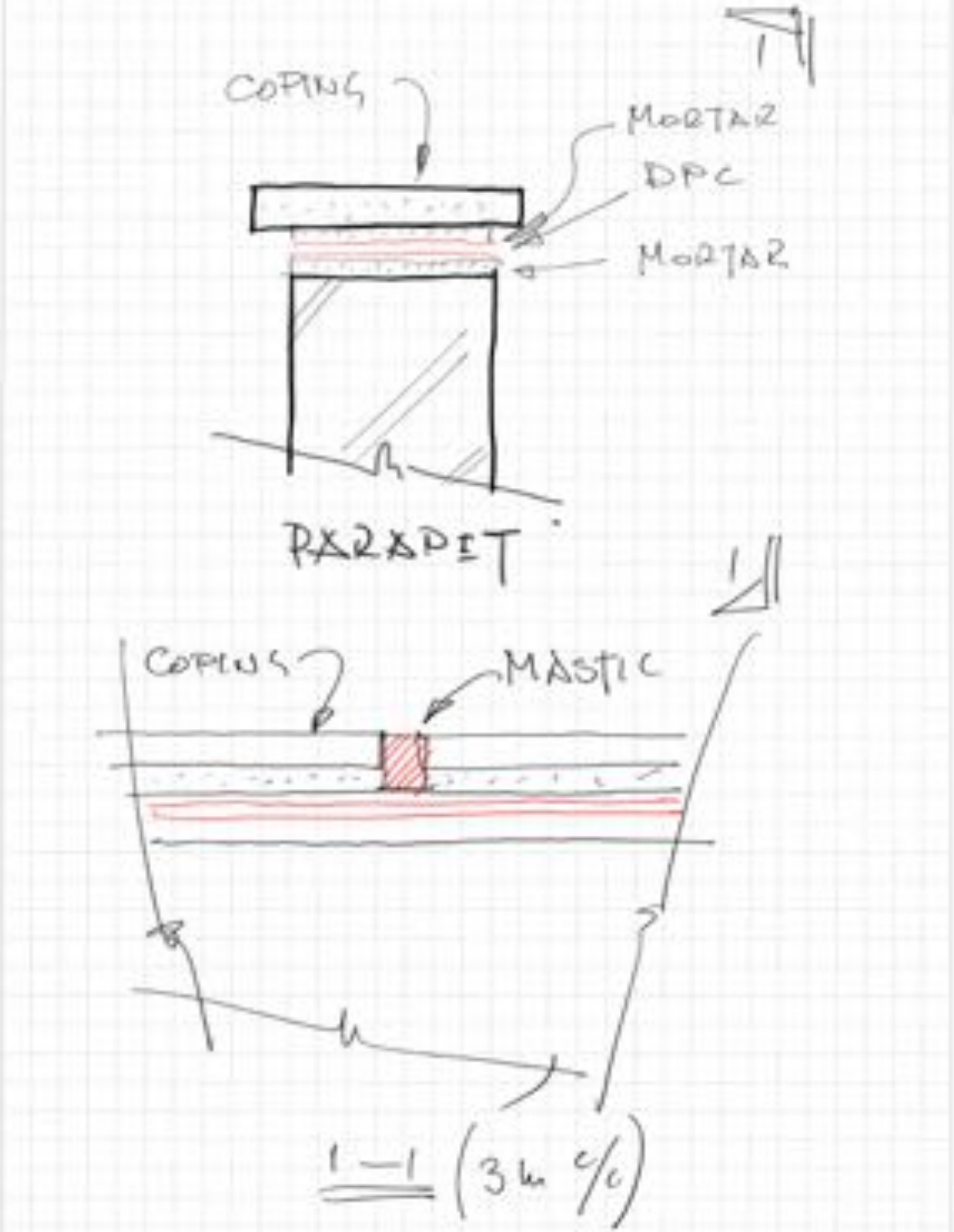

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