24-26 West Street
London
WC2H 9NA

Structural Method Statement

for

The proposed opening in the loadbearing brickwork wall

16th April 2020

Project No. 99547

DCL Consulting Engineers Ltd
3rd Floor
6 Flitcroft Street
London
WC2H 8DJ

Tel – 0207 998 5868
Email – admin@dcl.engineering
Web – www.dcl.engineering

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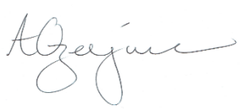
Revision History

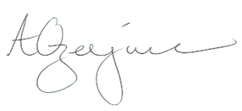
Rev.	Date	Status	Document Ref.	Comments
P1	15/04/20	Information	Structural Method Statement	Preliminary Issue
P2	16/04/20	Information	Structural Method Statement	Second Issue

Prepared By:



Alex Ozegovic *MEng (Hons)*
Senior Engineer

Reviewed by:



Alex Ozegovic *MEng (Hons)*
Senior Engineer

Approved by:

Frank Bates *BSc CEng MIStructE*
Managing Director

1 Introduction

DCL Consulting was appointed by The West Street Trustee as Structural Engineers for the proposed refurbishment works at 24-26 West Street.

This structural method statement considers the structural engineering implications of the proposed opening in the loadbearing brickwork party wall in between no.'s 24 and 26 West Street.

This report is for the exclusive use of the client and should not be used in whole or in part by any third parties without the express permission of DCL in writing. This report should be read in conjunction with all other consultant's reports.

2 The site

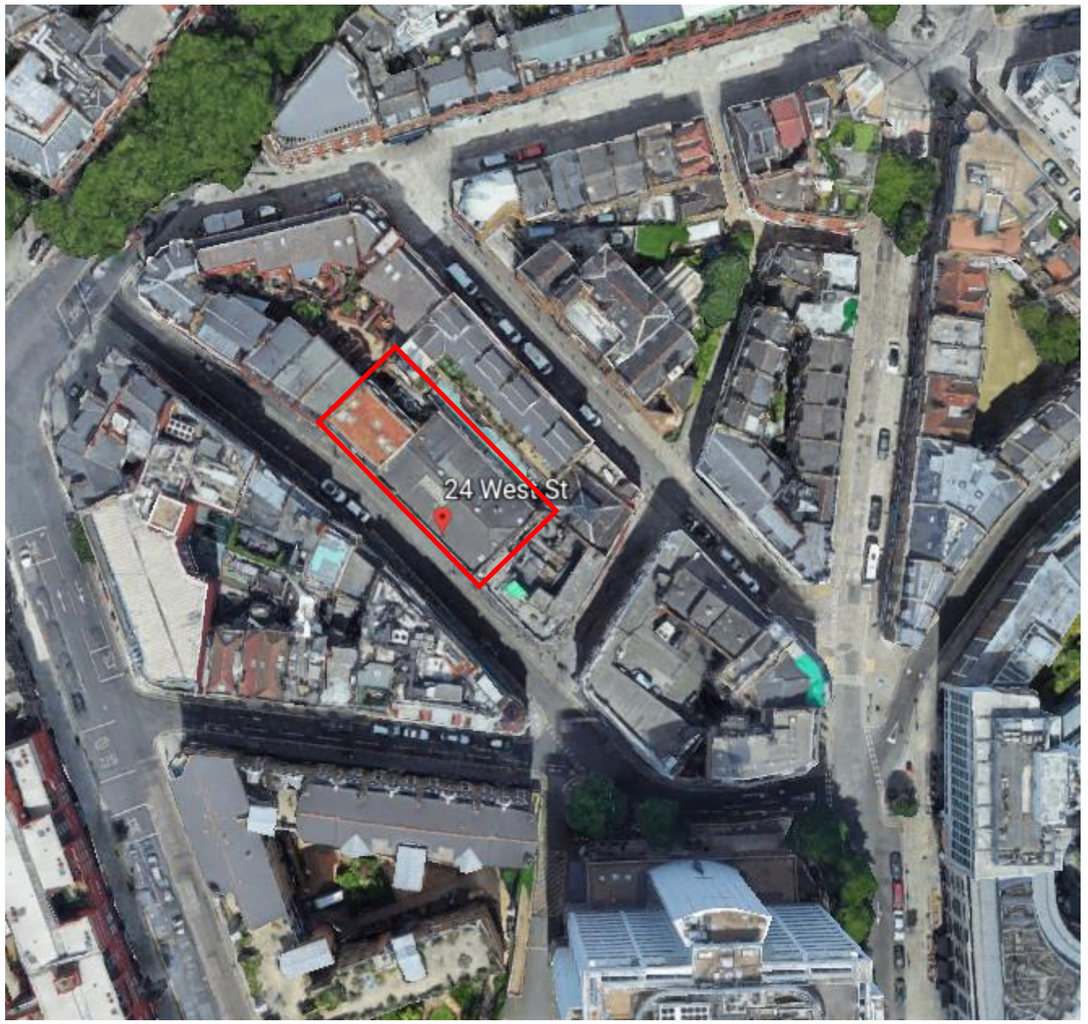


Figure 1 - Site map

The site, 24-26 West Street, is in Covent Garden, London.

The South West elevation overlooks West Street, the North West elevation is bounded to no. 26 West Street, the North East elevation is bounded to the back of a building that overlooks Tower Street, the South East elevation is bounded to The Ambassadors Theatre.

No site history desk study has been undertaken.

3 Existing structure

No desk study nor site visit has been undertaken by DCL.

This method statement has been based on a measured survey and other information passed on to DCL by the Client and its findings and recommendations are subject to a detailed site inspection following opening up works to the building.

The existing structure is of load bearing masonry walls and columns.

Perimeter walls are 440mm thick and stiffened by 440mm x 440mm piers to the front elevation only. 1st floor perimeter walls are 330mm thick with 330mm x 330mm piers to the front elevation only. The remaining walls above are 215mm thick.

The internal columns vary in size and are on average 550mm x 550mm in size.

The party wall in between no.'s 24 and 26 is 440mm thick from basement to first floor. First floor to second floor is 330mm thick and second and third floors are 215mm thick.

The column grid to no. 24 is regular with spacings of 5.5m x 3.5m on plan.

The floor structure is of suspended timber floors spanning between steel beams NE - SW. Sizes are unknown, however joists of 225mm – 250mm in depth at 400 centres are presumed. The steel beams are presumed to be 305mm deep sections. Bearings are presumed to be half the thickness of the wall they are spanning onto.

The topo survey to no. 26 was only conducted at ground floor. No information of the buildings upper floor has been issued.

The rear elevation brickwork wall of no. 26 between ground floor and first floor is thought to have been demolished previously. Twin steel transfer beams spanning 7m is presumed to be carrying the rear elevation wall and the subsequent upper floors.

The floor structures adjacent the party wall run parallel to the brickwork wall. The floor beams in both properties are supported by the party wall.

There is a small door opening circa 1m wide at ground floor in the party wall.

Brickwork vaulted cellars are beneath no. 24 and presumed to be in no. 26. The footing is presumed to be 1m wide corbelled brickwork.

BGS records have been assessed. The building is founded on Stiff London Clay. Allowable bearing pressure of 150kN/m^2 – 200kN/m^2 is presumed. Subject to site inspections and Building Control approval.

4 Proposed works

The following standards and design guides have been used in the design of the opening in the brickwork wall:

- BS 6399-1:1996 Loadings for buildings. Code of practice for dead and imposed loads.
- BS 6399-3:1988 Loadings for buildings. Code of practice for imposed roof loads.
- BS 8110-1:1997 Structural use of concrete. Code of practice for design and construction.
- BS 5950-1:2000 Structural use of steelwork in building. Code of practice for design. Rolled and welded sections.
- BS 5628-1:2005 Code of practice for the use of masonry. Structural use of unreinforced masonry.
- BS 8004:1986 Code of practice for foundations.
- IStructE – Manual for the design of concrete building structures to Eurocode 2.
- IStructE – Manual for the design of steelwork building structures to Eurocode 3.
- IStructE – Manual for the design of plain masonry in building structures to Eurocode 6.
- IStructE – Manual for the geotechnical design of structures to Eurocode 7.

The current door opening in the party wall is to be made wider to suit the Architect's proposals. The wall is to be 3.2m wide and circa 3m high from no. 24 ground floor level.

A small section of timber steps is to be constructed between no.'s 24 and 26.

Two new steel beams will be installed over the opening to support the 440mm wide brickwork wall. Steel section size - 203 x 203 UC. 46 Grade S275 J0.

The steel beams are to be bolted with M16 (8.8) bolts at 900 centres sleeved with 20mm steel hollow tubes.

The steel beams will be bearing on new 440mm x 440mm x 215mm deep polished C20/25 grade in-situ concrete padstones or grade B engineering brickwork. Subject to the Architect's proposals.

75mm of 1:2 dry pack with non-shrink additives is to be added in between the top of the steel beams and the brickwork above.

No strengthening to the brickwork walls or foundations are proposed. Subject to detailed site inspections and opening up works by DCL.

5 Construction sequence

Preliminary issue details and sections of the proposed works can be found in DCL's drawings.

Prior to the below works being carried out. DCL are to open the building in planned locations to review the structure in more detail to confirm current design proposals.

The proposed sequence to the works is as follows:

1 Initial site set-up

The contractor will provide site hoarding, personnel access gates, safety notices and welfare facilities etc. in accordance with City of Westminster Council Planning requirements and the CDM Regulations 2015.

2 Soft strip-out

The contractor will remove all plaster and finishes around the brickwork walls and beams to survey and ensure no discrepancies in the design.

The ground floor suspended timber structure is to be locally removed to allow a solid base for the temporary works.

3 Temporary works

The brickwork wall above the proposed opening will be supported by temporary works on both sides of the wall via traditional needling and propping which will be based off the basement brickwork walls via spreaders.

The existing steels beams will be propped separately via props and based off the brickwork walls.

The temporary works will be braced via scaffold tubes in both directions for lateral stability.

The Contractor shall be fully responsible for the design and detailing of the temporary works with BS 5975.

A set of indicative sequencing drawings for the temporary works will be produced by DCL.

4 Demolition of the brickwork

Demolition shall be undertaken using hand tools and light mechanical breakers to minimise vibration and disturbance to the brickwork wall itself and adjoining neighbours.

Additional pockets for the end bearing support on both sides are to be created.

5 Construction of permanent works

Formwork for the in-situ concrete padstones will be installed.

The concrete padstones will be poured and subsequently polished and left to cure for a minimum of 7 days until enough strength has reached.

The steel beams will be lifted into place and installed on the concrete padstones. A minimum of 75mm is to be left between the top of the steel beams and the above brickwork.

The steel beams will be bolted through together.

The existing beam supported by the new beams will be bolted together.

The 75mm gap will be dry packed.

As soon as both dry pack and concrete padstones have enough strength. The temporary works are to be removed in stages.

Following the removal of each needle, the brickwork will be made good.

Any cracking or loose brickwork will be made good and re-pointed, as necessary.

6 Load assessment

Vertical loads due to self-weight, superimposed dead loading and imposed loading will be applied to the steel beams over the opening.

Only a small triangulated portion of the self-weight of the wall will be applied to the beam. The remaining brickwork above the triangulated portion will be designed allowing for arching action in the brickwork.

The steel beams will act in flexure and shear to transfer the vertical loads to the supports at either end of the opening.

The vertical loads on either side of the opening will be transferred through the walls in compression.

Eccentric loading will be considered and subsequently the brickwork walls designed accordingly to take this effect into account.

The brickwork is London Stock with mortar designation III. The characteristic strength of the masonry is presumed to be 2.5N/mm^2.

Notional horizontal loads at 2.5% of the total ULS dead and imposed loads will be considered and applied as a shear force along the plane of the wall.

The footings bear on Stiff London Clay with an allowable bearing pressure of 150kN/m^2 – 200kN/m^2. This is to be confirmed on site.

7 Construction monitoring

DCL will monitor the structural works periodically for the duration of the construction as agreed with the Client.

8 Mitigating noise and nuisance

The contractor shall implement the necessary measures in accordance with any City of Westminster Council Planning conditions in order to keep noise and nuisance from construction activities to within acceptable limits.