

Structural Engineer ing Report for Listed Building Consent

14 New End Square

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1.0 Introduction

Longdin Engineering Ltd was appointed to provide structural engineering services for the refurbishment and extension to number 14 New End Square, itself a property that is not of Listed Building status.

The adjoining property, number 16 New End Square, is Listed, and the proposed works to no.14 involve an upward extension of the party wall, as shared with no.16.

The objective of this report is to present the scope and nature of the works proposed upon the shared wall, specifically to present the measures that will be taken to ensure that the historic fabric of the listed adjoining building structure will be respected and preserved.

2.0 The Property

2.1 The Existing Building (No.14)

The property is located in Hampstead. After substantial bomb damage in WWII, the original building was demolished, and a mid-20th century reconstruction was subsequently undertaken.

The facades of this reconstruction are fully-tied to those of no.16, at the junction with the shared wall.

2.2 Existing Structural Configurations

The reconstructed property utilised modern materials, consisting of cavity masonry with inner blockwork skin, reinforced concrete floors to first, ground and lower ground floors, and timber joisted floors to the second floor. The existing flat roof is also of timber joists.

3.0 Proposed Works

3.1 Additional Storey (Third Floor)

It is proposed to add a mansard-enclosed single storey extension to the rooftop of no.14.

In so doing, the space will be enclosed on the party wall elevation by a solid masonry wall, built-up off the existing party wall.

Detailed calculations have been undertaken to demonstrate that the increase in loading will be modest, and capped at 10% of that of the existing loading, as has been required to meet party wall and Building Regulations approvals.

This loading has been moderated by utilising a lightweight configuration of blockwork to the no.14 portion of the shared party wall, whilst enabling the use of traditional yellow London Stock bricks to the external, no.16, side.

3.2 Construction Detailing of Shared Wall

The external half of the wall, that upon the no.16 (listed building) half of the shared wall, shall be a single 4" leaf of traditionally-bonded yellow London Stock brickwork.

This shall be tied to the lighter-weight blockwork leaf on the non-listed half of the shared wall, utilising cross-headers at a minimum of 900mm horizontal and 450mm vertical spacings, to provide a cross-leaf tying to modern standards, whilst avoiding use of modern metal ties.

Where tying this raised party wall to the existing chimney stacks, stainless steel flat-bar ties would be face-fixed to the historic chimney masonry using plugs and screws, as being the least invasive fixing method possible.

4.0 Approach to Structural Works

The works will be conducted in a sympathetic manner, and with care and attention, as befitting of works adjoining a building of Listed status and merit.

4.1 Construction Method

Contractor's methodologies will ensure that no historic party wall fabric shall be removed.

The works proposed will not cause the removal of any existing buttressing or restraining elements to the party wall, and so its restraint and stability will be unaffected.

4.2 Design Codes

The following design codes have been followed during the detailed design stage:

- The Building Regulations 2010 - Approved Document A
- BS 648 - Weights of building materials
- BS 5950:1 - Structural use of steelwork in building
- BS 5268 - Structural use of timber
- BS 5628-1:2005 - Code of practise for the use of masonry
- BS 6399:1 - Loadings for buildings (Dead and imposed loads)
- BS 6399:2 - Loadings for buildings (Wind loads)
- BS 8000:Section 2.2:1990 - Workmanship on building sites

5.0 Summary

The proposed structural additions have been carefully designed, utilising lighter blockwork to the non-listed side, in order to ensure that the listed building side of the wall can be built using traditional brickwork, whilst ensuring that the overall additional loading is non-impactful. This is intended to safeguard the integrity and stability of the shared party wall.

The type of masonry material, and the tying between the two wall skins, has been devised to be sympathetic to the Listed building half of the shared wall. This includes the utilisation of appropriately-bonded traditional stock bricks, and the use of cross-header bricks to form a traditional cross-leaf tying arrangement, in lieu of modern steel ties.

Where new party wall masonry abuts and is tied to historic fabric, in this instance the chimney stacks, stainless steel ties are proposed, which will face-fix to the history brickwork, thereby being as minimally invasive as possible. This is standard practice when forming new additions that are tied to historic elements in listed building refurbishment schemes.

As a result of this sympathetic approach, the overall integrity of the historic building fabric to the Listed building side of the shared party wall will not be adversely affected in the process of extending the structure of no.14.

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