Structural Feasibility Report

1 New Square

London WC2A 3SA

For

Rosali Pretorius

12th February 2018

By

Pole
Structural Engineers
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CONTENTS:

Name	**Signature**	**Date**
Sam Stephens Associate BE CEng MIStructE		12/02/2018
Reference	**Revision**	**Issue Date**
RP01	0	12/02/2018

1.0 Summary

1.1 Pole Structural Engineers have been asked to comment on the structural feasibility of installing a number of roof lights into the existing roof at 1 New Square. We have also been asked to comment on the removal of some internal walls.

1.2 From viewing the existing structure, we have concluded that it will be possible to form these roof lights without adversely affecting the stability or serviceability of the building as a whole.

1.3 By careful detailing and maintaining as much of the original fabric as feasible, it should be possible to form these roof lights in a manner sympathetic to the age and Grade II* status of the building.

1.4 The existing roof structure is framed in such a way to take support from the external walls and an internal line of support at the valley beam. Therefore, we do not believe the partition walls discussed are providing support to the roof and so can be removed.

1.5 As with any works in an existing building, works should progress with caution and props should be on hand. Should movement develop, the area should be propped immediately and Pole Structural Engineers contacted. The Contractor must remove all ceilings and confirm the assumptions in this report before proceeding with the works.

1.6 The possible structural scheme for the formation of the roof lights is discussed in this report but only up to feasibility/planning level. Should the Client wish to proceed with the works, Pole Structural Engineers would be happy to provide assistance up to building regulations and construction stages by separate appointment.

2.0 Brief

2.1 We confirm your recent instruction, provided on the 2nd February 2018 through your representative My Harry Pangli or Prelim Studios.

2.2 You explained that you were planning to undertake some renovations to your flat at 1 New Square and required a Structural Engineers opinion on their feasibility, as well as some guidance on how these works could be achieved in the context of a listed building.

2.3 The purpose of this feasibility report is to allow the client to understand the potential structural implication of the proposed alterations and extensions, not for construction. Structural designs and drawings will be required in due course for Building Regulations submission and construction.

2.4 We understand that this report will also be included in an application for Listed Building Consent (submitted by Mr Pangli).

2.5 We would stress this is not a wider structural appraisal of any other parts of the skeleton structure such as any other walls or the roof covering or floor timbers etc.

2.6 Pole Structural Engineers Associate, Sam Stephens (BE CEng MIStructE) visited site on 5th February 2018.

2.7 Our opinions are of course based on a single visual inspection without the benefit of any intrusive exploratory work, or any enquiries with Local Authorities etc.

2.8 Please note that we have not assessed the structural adequacy for the existing structures from previous alterations, as this is outside our remit for this report.

2.9 We trust we have interpreted your brief correctly, but please contact us immediately if you wish to extend our appointment to look at any other matters or if following the recommendations in this report you would like us to carry out further investigations, enquiries or provide further advice on the matter for you.

3.0 Description of properties

3.1 The flat in question occupies a portion of the top (third) floor of the Grade II* listed building at 1 New Square, Lincolns Inn.

3.2 No structural record drawings of the building were made available for us to study.

4.0 Site Observation

4.1 At the time of our inspection, the flat was empty and vacant. All references to left and right (side to side) are as if facing the main entrance to the building with your back to the street.

4.2 The floor appears to be constructed of 225x50 timber joists at 350crs, spanning from 'side to side'. There are ceiling joists at a lower level, spanning in the same direction which appear to be independent.

4.3 The roof is constructed from two parallel rows of kings post trusses, spanning 'front to back' at irregular intervals. The trusses support timber purlins and a ridge beam which in turn provides support to the 100x50 rafters at 350crs. The bottom chord of the trusses supports 100x50 ceiling joists at 350crs. There is a ceiling tie and hanger breaking up the span of the ceiling joists near mid-span. The trusses are supported at the internal valley by a 2/275x75 timber beam.

4.4 The floors and walls are supported chiefly on the external masonry walls. The internal valley beam is apparently supported on an internal element (such as a masonry pier). However, this is outside the demise of the Clients flat and so could not be verified.

4.5 The internal walls appear to be timber stud of varying vintages and do not appear to provide intentional support to the roof or the ceiling.

4.6 The trusses to the western half of the roof could not be viewed due to access constraints.

4.7 The trusses that were viewed during this limited visual inspection were in good condition with no major defects.

4.8 The decoration is very dated and in poor condition.

5.0 Discussion & Conclusion

5.1 The roof and ceiling structure is supported on the external walls and internal valley beam. Therefore, it is likely that the internal walls are partitions and can be removed without compromising the stability of the overall structure.

5.2 As with any works in an existing building, works should progress with caution and props should be on hand. Should movement develop, the area should be propped immediately and Pole Structural Engineers contacted. The Contractor must remove all ceilings and confirm the assumptions in this report before proceeding with the works.

5.3 The existing trusses, ceiling ties and purlins will remain. Only the existing rafters and ceiling joists will be removed to accommodate the new openings.

5.4 The proposed skylight weight of approximately 65kg/m^2 is comparable to the weight of the existing slate roof construction that is to be removed (55kg/m^2 as per *Structural Engineers Pocket Book, Second Edition by Fiona Cobb, Elsevier*). Therefore, the installation of the roof lights can be considered a nominal increase and will have no impact on the structure below.

5.5 The change in loading on the existing trusses will also be minor. However, an engineering assessment of the trusses will be undertaken. Should the trusses have insufficient capacity, they will be strengthened in a sympathetic manner (such as doubling up the timber members).

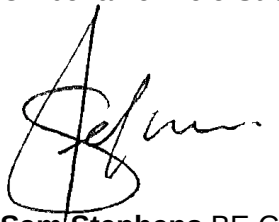
5.6 The framing of the roof-lights will be achieved by adding additional framing members to match the dimensions of the existing purlins and rafters, thus minimising the visual impact of the alterations.

5.7 Once exposed, the existing trusses will be checked for defects and repaired as required. Any repairs that are required will be designed to match the existing construction as much as possible (eg traditional bridle joints and stirrups).

5.8 In addition to their obligations to Local Authority (Planning, Building Control approval and Listed Building Consent), the Client should be aware of their responsibilities under the Party Wall etc Act 1996 and any obligations to obtain Landlords Consent.

5.9 We will be pleased to offer our services for the proposed scheme when you wish us to proceed, meanwhile, we trust the above is clear, but please contact us if you have any questions.

On behalf of Pole Structural Engineers



Sam Stephens BE CEng MIStructE
Associate

6.0 Partial Photo Record


05/02/2018


05/02/2018

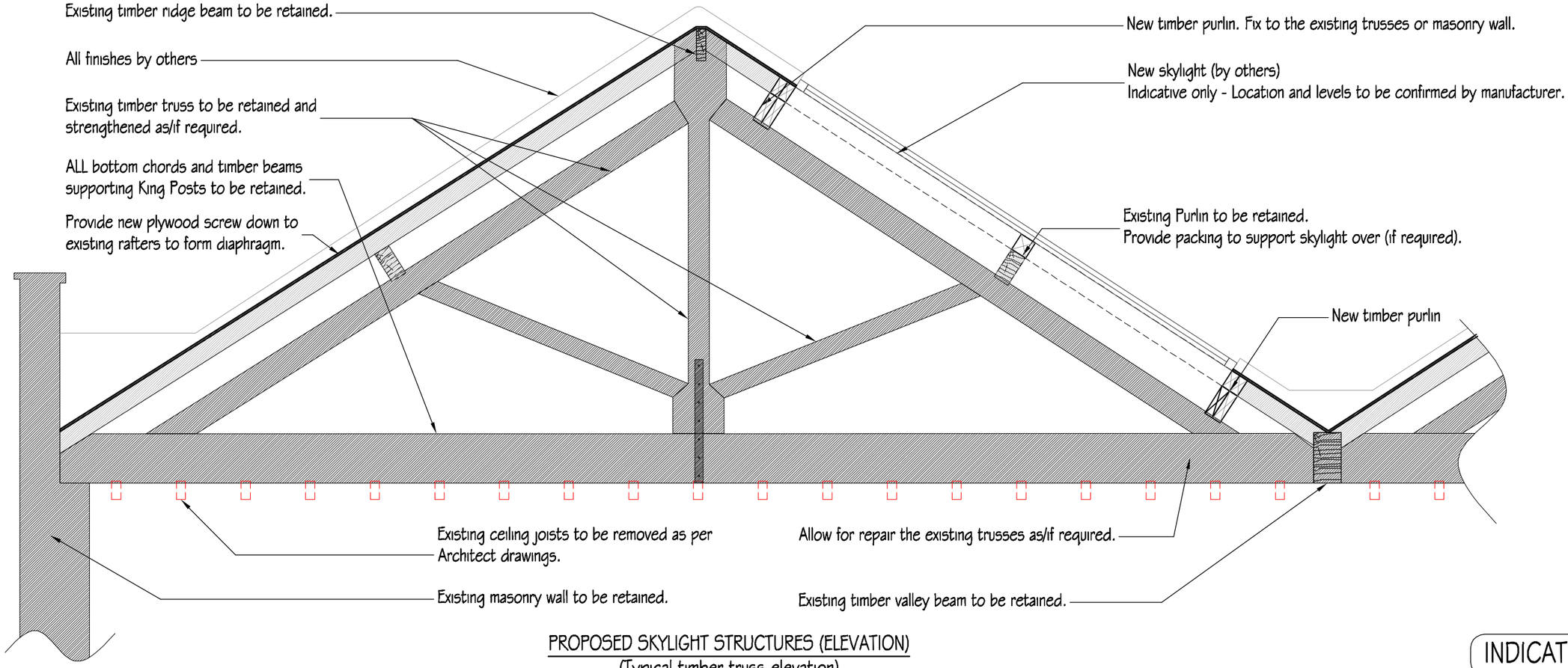

05/02/2018


05/02/2018


05/02/2018


05/02/2018

7.0 Structural Scheme (Preliminary planning level only)



PROPOSED SKYLIGHT STRUCTURES (ELEVATION)

(Typical timber truss elevation)

(Not to scale - Indicative only)

NOTES :

A) This drawing has been prepared with limited or no site exploratory work and much of the skeletal structure remains hidden until work commences. It is common for the precise nature of the works to be varied slightly, or additional works required, to suit the conditions encountered. It is usual for a contingency sum to be included for such circumstances.

B) This drawing to be read in conjunction with all relevant drawings produced by the Architect and Pole Structural Engineers

C) Pole Structural Engineers drawings are not to be scaled to obtain dimensions. All dimensions, setting out information and levels are to be obtained from the Architect's drawings and site measurement.

D) Details of all non-structural items, ie ventilation, insulation, services, drainage, waterproofing, fire protection, dampproofing, finishes etc. are to be obtained from the Architect's drawings.

E) The contractor is to inform the Architect and Pole Structural Engineers of any discrepancies shown on the drawings with regard to the size, position and arrangement of the existing structure and associated elements.

INDICATIVE ONLY

FOR FEASIBILITY ONLY

NOT FOR CONSTRUCTION

NOTE:
Contractor to ensure all floors and roofs are fully supported at all times during the works until the permanent steelwork is installed. Contractor shall provide method statement, sequence of work and temporary work proposal to the engineer prior to commencing the works

Rev	Date	Amendment
A	21.02.18	Feasibility report
0	12.02.18	Feasibility report

Drawing Status			
Preliminary		Tender	
Information	X	Construction	
Building Regs		As Instructed	

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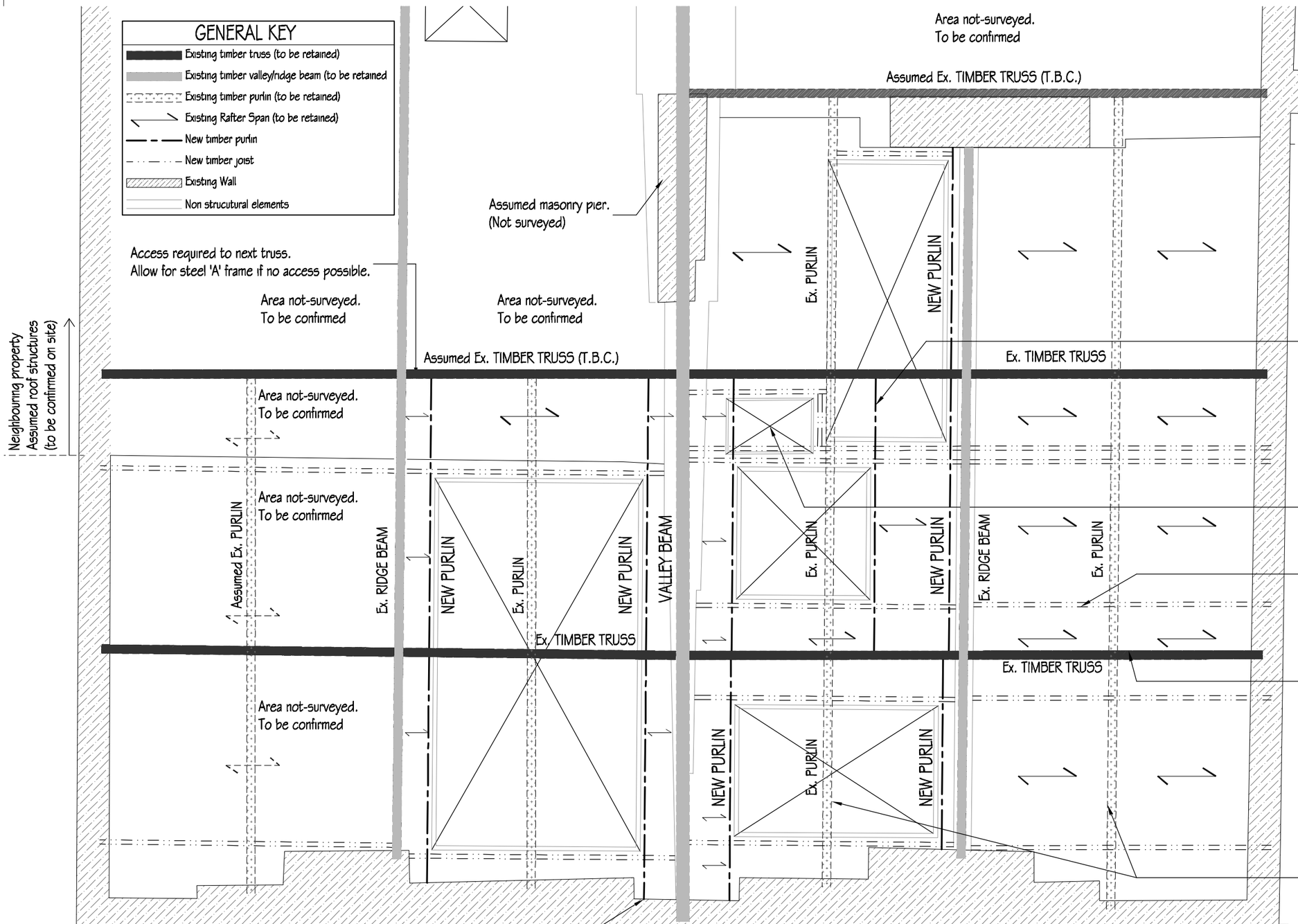
Drawing:
PROPOSED ROOF STRUCTURES FO
NEW SKYLIGHTS (FEASIBILITY ONLY
TYPICAL TIMBER TRUSS ELEVATION

Project:
1 NEW SQUARE
LONDON
WC2A 3SA

Date: FEB '18
Scale: N.T.S. @A3
Drg No: 6328/SK01
Rev: A

Drawn JMT



All the main elements of the existing roof (e.g. timber truss, valley beam, ridge beams and purlins) and the existing ceiling (e.g. king posts and timber beam chords) to be retained.

PROPOSED ROOF PLAN

(Not to scale - Indicative only)

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Drawing:
PROPOSED ROOF STRUCTURES FO
NEW SKYLIGHTS (FEASIBILITY ONLY
INDICATIVE ROOF PLAN

Project:
1 NEW SQUARE
LONDON
WC2A 3SA

Date: FEB '18
Scale: N.T.S. @A3
Drg No: 6328/SK02
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Drawn JMT