

7 Prince Albert Road
structural engineering



main staircase

client: IRIS INVESTMENTS LTD
address: GREENACRES
BUNKER HILL
L'ANCRESE
GUERNSEY, GY3 5JT
project no: 430

January 2008

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7 Prince Albert Road
structural works to main stair

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1 INTRODUCTION

1.1 Summary

We are engaged by Iris Investments Ltd to provide structural engineering consultancy services for the refurbishment of the residential property at 7 Prince Albert Road, London NW1.

This report records the condition of the staircase from first to second floor, advises on necessary structural remedial works including a proposed sequence of works which has been developed in conjunction with the main contractor.

This report has been prepared to respond directly to the Listed Building Consent dated 13 December 2007, condition 3(a).

Key Construction Details are included as Section 4.

A photographic record of the inspection is included as Section 5.

2.0 OVERVIEW

2.1 Existing Construction

The staircase consists of 6 winders at the top and bottom with a straight flight of 8 treads parallel to the external wall.

The stair construction is as follows;

- o 25mm thick timber treads and risers.
- o supported on external cut stringers, 20mm thick.
- o with two internal 75x100 timber tread supports with 22thk timber cut to stair profiler to the side;
- o bearing each end onto 120x100 timber beam cantilevering from the wall.
- o the external stringer is spliced at the transition to the winders at top and bottom.

A photographic record of the existing structure of the staircase is shown in section 5.

2.2 Structural Works to the Main Staircase

The existing staircase from first to second floor has over time eased away from the external wall and slopes towards the centre of the stair. The central tread being 55mm out of level.

The stair is currently structurally unstable and if no action is taken the staircase will continue to deteriorate and in time fail. A series of structural repairs and remedial actions are proposed which take account of the special architectural and historic interest of the stair.

3.0 REMEDIAL WORKS

3.1 Objective

The objective of the work is to ensure that the staircase is returned to being structurally sound and fully serviceable. We do not anticipate that making the staircase level again will be possible as the actual, timbers will have deformed over time.

The proposal seeks to use externally fixed ties to draw the staircase back to the external wall and refix the treads and risers to the original cut stringer fixed to the wall.

3.2 Sequence of Works

The sequence of works should be read in conjunction with the attached drawings and details. The proposed sequence of works is as follows;

1. Clean all debris and dirt from the staircase and in particular the internal cut stringer.
2. Locate the tie rod points (4No) on the external face of the masonry.
3. Form pockets in external leaf of masonry in order to set in 250x250x8thk MS plates.
4. Attach internal MS brackets to the tread, riser and stringer. Bracket complete with threaded socket to receive tie rod.
5. Drill through internal tread supports to allow installation of tie rods.
6. Install tie rods through tread supports complete with spacer tubes and connect to threaded socket.
7. At two locations secure temporary soft wood thrust blocks to external face of stringer directly in line with riser adjacent to tie rod.
8. Install adjustable acro props to thrust block locations and secure to floor structure.
9. Inspect structure to ensure it is still free of debris.
10. Commence adjustment of staircase as follows;
 - i. Adjust external tie rods to take initial slack out of system.
 - ii. Incrementally adjust props to push up and against thrust blocks
 - iii. Adjust external tie rods to take take up any slack and take the strain.
 - iv. repeat steps (ii) & (iii) whilst visually inspecting staircase until the staircase is set back into the cut stringer against the wall. Take care to ease and adjust treads and risers.
11. When stair is fully adjusted lock off external nut on tie rod.
12. Install hard wood wedges into the cut stringer to the underside of the treads and risers.
13. Inspect and refix any loose hardwood wedges.
14. Use 2"x1" softwood blocking to screw fix tread and cut stringer. (This replicates existing detail)

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4 STRUCTURAL DETAILS

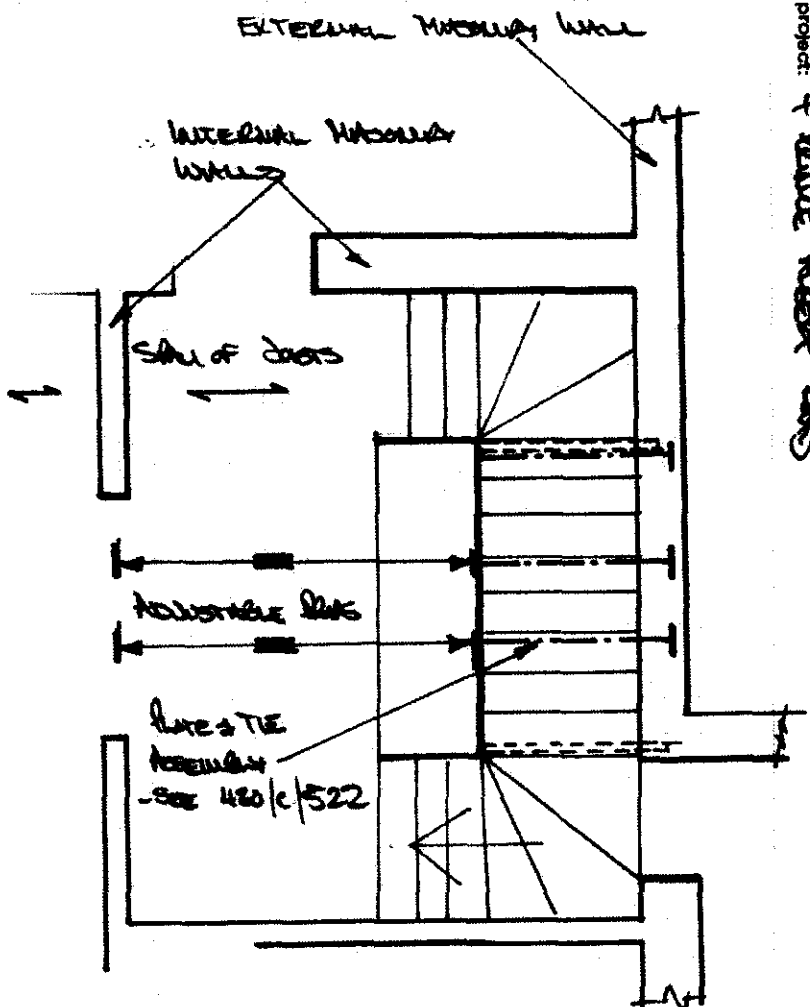
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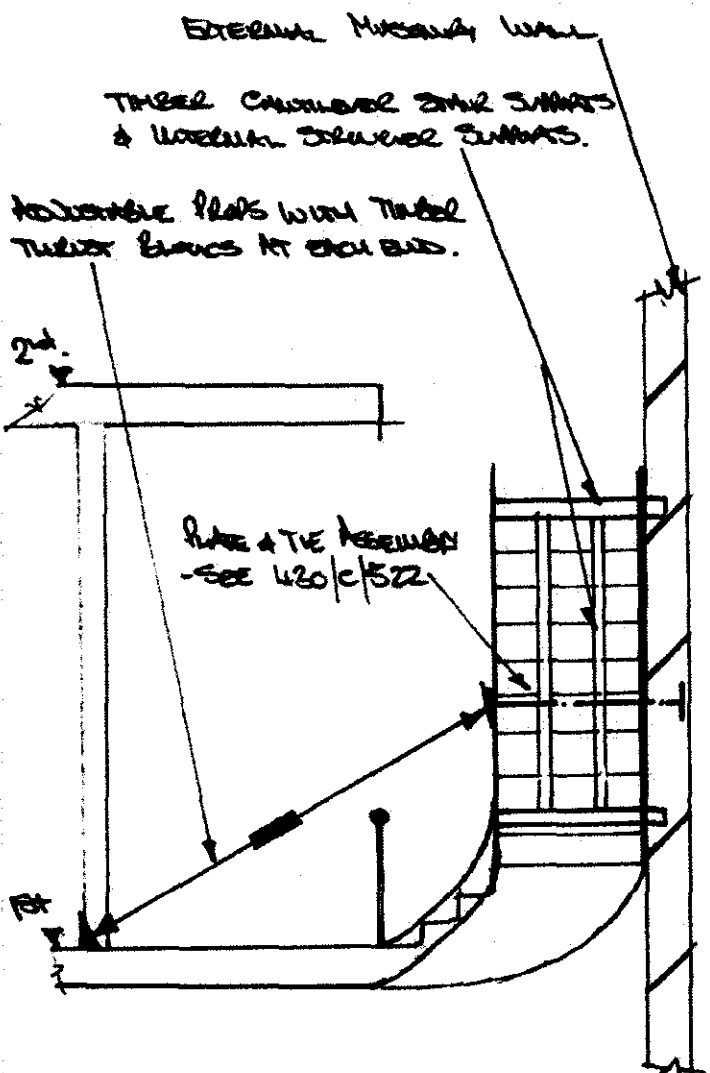
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project: 7 LEAVE HOUSE LND



KEY Plan - STAIR P - 2nd



INDICATIVE SECTION.

engineer:

28

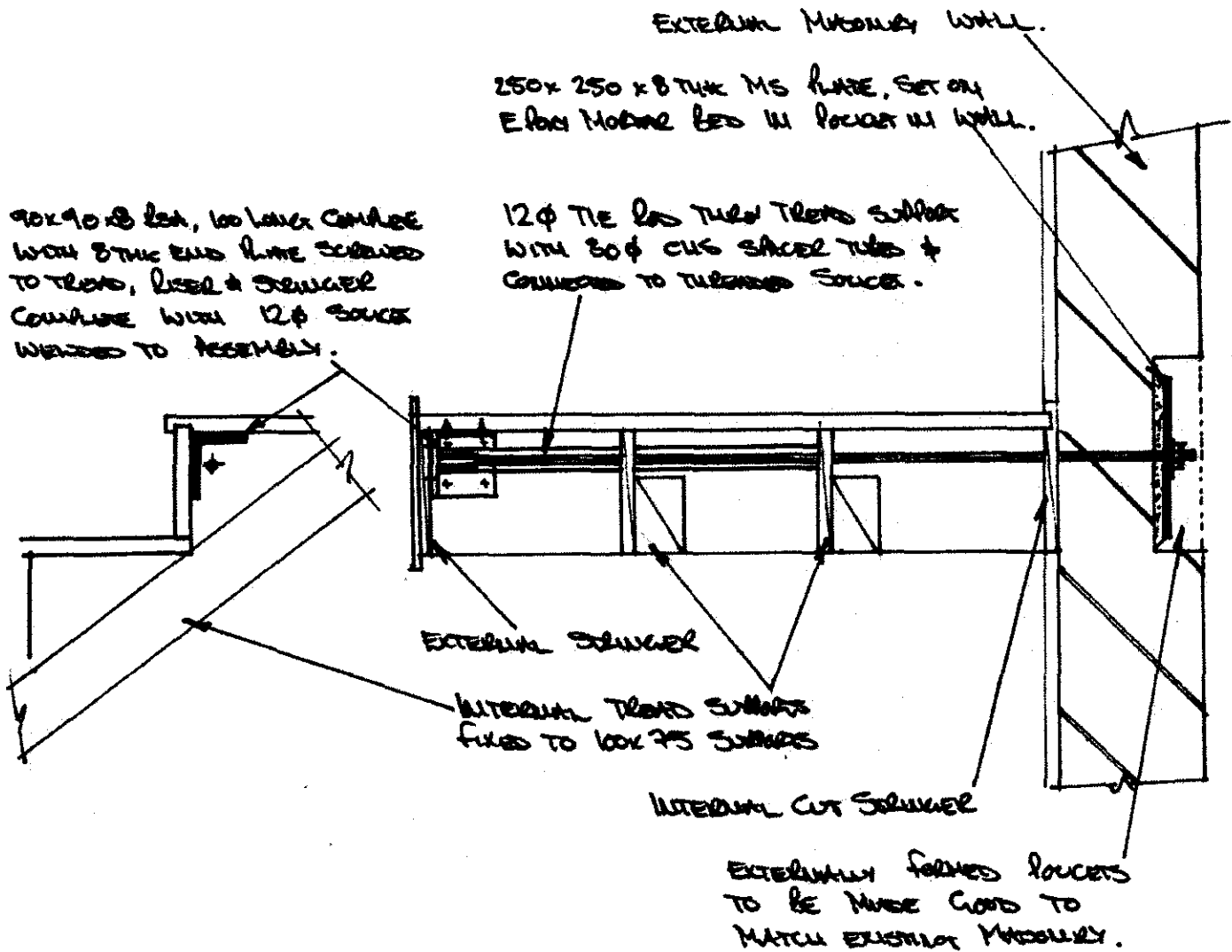
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sheet no:

U20/C/521

date: May 08
 job no: 430
 project: 7 Minute Interlock Doors

milk



STAIR REMEDIAL

PLATE & TIE ASSEMBLY DETAIL.

engineer: 28
 checked:
 sheet no: 430/c/522

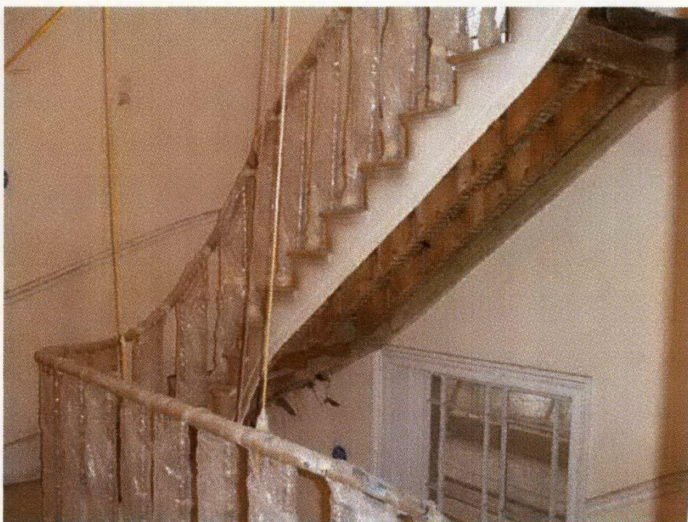
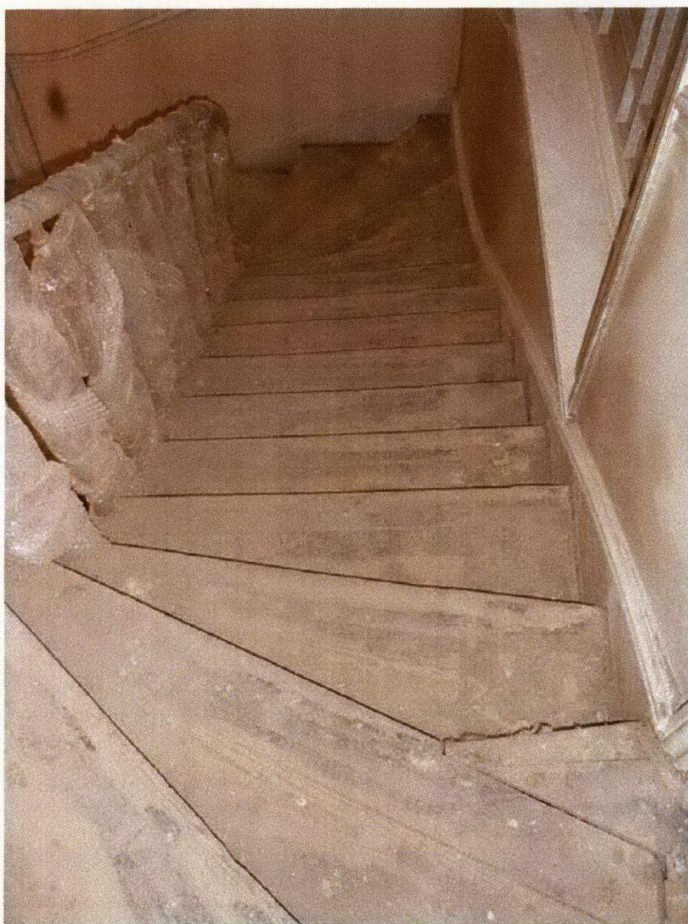
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5 RECORD PHOTOGRAPHS

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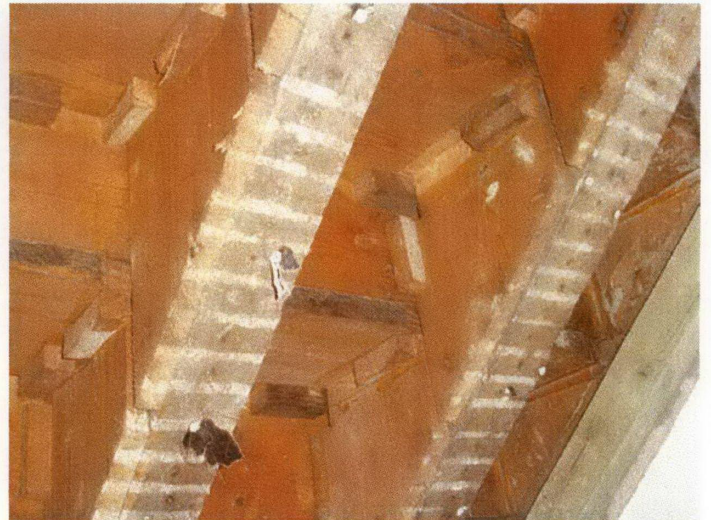
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Stair Geometry

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Opening at Cut String & Missing Wedges