

17 Haslington Street, Leek

DATE WORK CARRIED OUT: August 2007 – July 2008

SUMMARY OF PROJECT: Replacement of Long-Span Sole Plate Beam Carrying Timber Frame

LISTING GRADE: Market Town Conservation Area

DESCRIPTION OF THE HISTORIC WORK AND ITS SETTING

17 Haslington Street is a substantial Edwardian style detached property set in tree lined residential cul-de-sac near the centre of Leek.

The property has a double gable frontage and is unusual in form and layout being arranged on four floors including rear attic rooms and a basement to only part of the building footprint. The property is situated on a moderate sloping site that rises at the rear with the main front door entrance accessed via a veranda that extends across a precast concrete terrace elevated high above the main street level.

The house construction comprises solid masonry brick walls up to first floor level, with the front facade projecting in part over the veranda being formed from a substantial oak timber frame with board, lathe and plaster infill internally allowing large rooms internally

GCA were initially contacted by the owner in the summer of 2007 to carry out a specific structural inspection and appraisal of the timber frame to the front elevation facade that had been partially exposed by redecoration work in one of the first floor bedrooms.

Close examination of the exposed soleplate beam revealed that it had clearly suffered from ingress of water causing wet rot over a long period of time and that substantial part of the core (up to 70% of section) of the large oak beam had in places been lost or compromised through decay.

Due to the position and arrangement of the timber it was decided that an economic repair in-situ by splicing in new pieces of matching hardwood or by reinforcement using threaded stainless steel bar and resin fixing was not practicable.

A recommendation for like-for-like beam replacement rather than patch repair was also made in light of the intricacies of reforming traditional mortise - tenon and pegged construction that would remain in plain view and the unknowns that could be affecting other parts and elements in the timber frame.

In 2008, we were contacted by Croft Building and Conservation Ltd, specialist building contractors, to assist them in designing temporary support systems and scaffold access whilst they replaced the affected beam with a new oak piece 11.0metres in length.

DESCRIPTION OF CASE STUDY WORK

GCA's initial appointment by the private owners was to carry out an inspection of the members to the upper timber frame that had been exposed by some decoration work and found to be rotten in several places.

Our survey found the exposed bottom sole plate beam to be severely rotten due to past water ingress. Using knowledge gained from carrying out property surveys over a twenty five year professional career it was clear that the extent of the decay in the heartwood meant that an economic repair insitu was not a realistic option and complete replacement of the member was the only practical alternative.

It was also clear that the job would be quite invasive due to the position and awkwardness to access the long beam section and that great consideration would need to be given to the methods employed in replacing the timber whilst temporarily supporting the load as to make the project economically viable for the owners of perhaps limited finance.

We recommended several possible competent building contractors and oak frame specialists who would be able to price the work. In the event the traditional conservation specialist builder contacted us to design a safe system of temporary support and combined access scaffold.

It was therefore arranged to revisit the property to carry out a measure of the building frame, floor span direction and best means for access

The non uniform profile of the front wall and form of construction meant that the level and system of support varied across the length of the elevation and the scaffold support and foundation stepped appropriately. We had to design needle beams to take the full weight of the structure above the beam without allowing any slight deflections that could cause damage or disturbance to the fabric and finishes.

Our final role was to inspect the method of needle support and pinning up provided by the Contractor to ensure that the critical points of load were well supported in the temporary situation and that steel splice plates were provided on the face of the frame across any of the connections where the strength and integrity of the joint was uncertain or suspect. Finally small drips and flashings were to be introduced on completion to the bottom side of infill rendered panel sections to dissuade rainwater ingress especially at the joints

The work was satisfactorily completed in the summer of 2008. The cost of the billed contractors work is unknown.

The professional fee expended on the project was just under £1600.00 in total inclusive of VAT.

EXTRACTS FROM PROJECT FILE

SKETCH DRAWINGS

METHOD STATEMENT

SAMPLE PHOTOGRAPHS



Consulting Civil, Structural, Highway & Transportation Engineers
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 E-mail: stafford@gcalimited.com
 Offices at Derby, Stafford, Warwick and Leicester

Dwg No 3/1658/Sk04

Rev

Name	Date	Prelim.	<input type="checkbox"/> Detailed	<input type="checkbox"/> Tender	<input type="checkbox"/> Contract	<input type="checkbox"/> As Built
Drawn		Do not scale dimensions from this drawing				
Checked		Rev	Date	Details	Rev by	Approved
Approved						

Scale 1:50

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Client

Project 17 HARTINGTON STREET,
 LEEK - TEMPORARY PROPPING

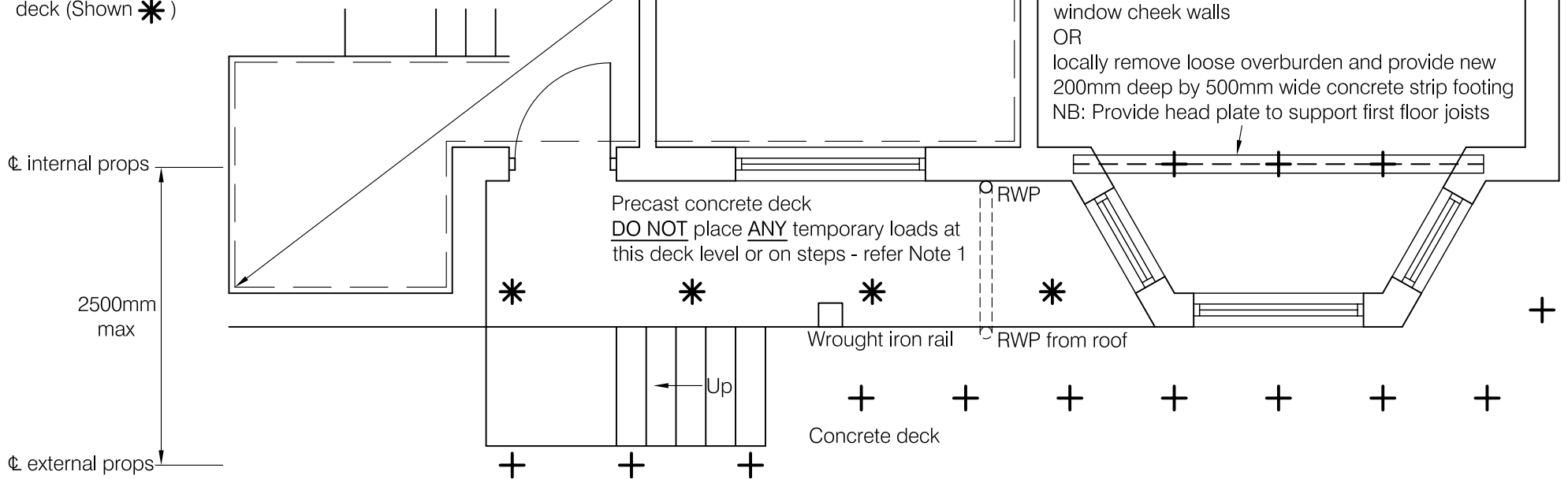
Title GROUND FLOOR PLAN - PROPOSED

Key

+ Adjustable steel "Acro" props, Code Size 2 or above to BS4074 at 900mm max internal spacing

Needle beams to be 150 x 200mm timber or 152 x 89mm RSJ

Note 1: Ceiling to outside verandah to be independently supported by props taken through and below precast concrete deck (Shown *)





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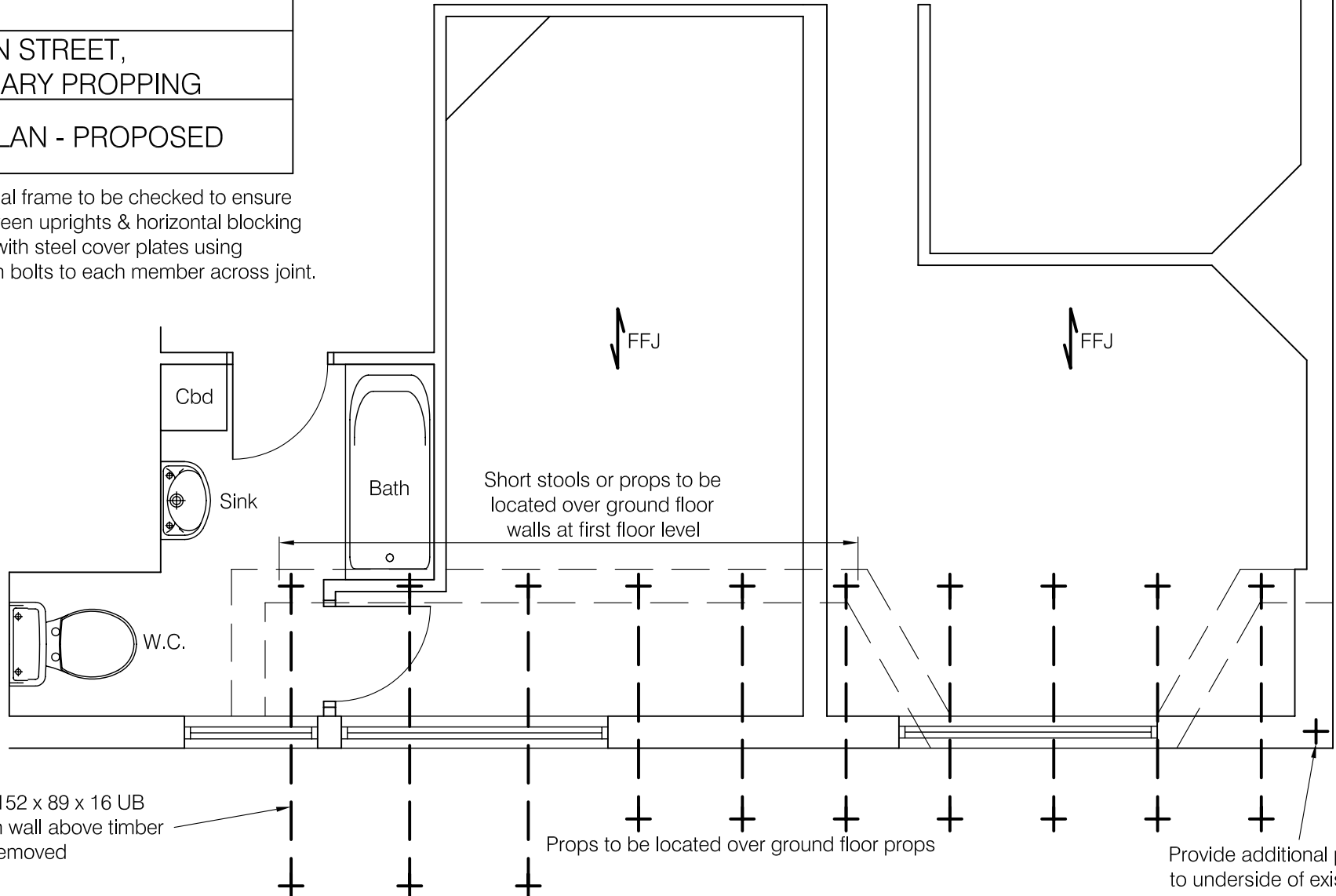
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Client

Project 17 HARTINGTON STREET,
LEEK - TEMPORARY PROPPING

Title FIRST FLOOR PLAN - PROPOSED

Note: Timber joints to external frame to be checked to ensure adequate load transfer between uprights & horizontal blocking pieces, otherwise reinforce with steel cover plates using minimum 2 No. M10 through bolts to each member across joint.



Provide 10 No. 152 x 89 x 16 UB needles through wall above timber member to be removed

Props to be located over ground floor props

Provide additional prop to underside of existing

Project		17 HARTINGTON STREET, LEEK		Job Ref.		31658					
Section				FRONT FACADE TEMPORARY SUPPORT				Sheet no./rev.		MS 1	
Calc. by		Date		Chk'd by		Date		App'd by		Date	
CP		21/06/2008									

METHOD STATEMENT


THE PROPERTY IS A SUBSTANTIAL EDWARDIAN DETACHED DWELLING ON FOUR LEVELS SITUATED ON A ELEVATED SITE WITH THE GROUND FLOOR RAISED ABOVE THE FRONT TERRACE ACCESS. THE UPPER TWO STOREYS INCLUDING THE TWIN GABLE ON THE FRONT ELEVATION IS A LOAD BEARING TIMBER FRAME.

REMEDIAL WORK IS REQUIRED TO THE FRONT FACADE TIMBER FRAME AT FIRST FLOOR LEVEL WHICH HAS BEEN AFFECTED BY ROT.

WE UNDERSTAND THAT THE EXISTING DEFECTIVE TIMBER SOLE PLATE IS TO BE REMOVED AND REPLACED WITH AN EQUIVALENT SIZE NEW TIMBER. IN ORDER TO EXTRACT THIS MEMBER IT IS NECESSARY TO TEMPORARILY SUPPORT THE EXISTING FRONT WALL FRAME ABOVE FIRST FLOOR LEVEL AND TO ALSO SUPPORT THE FIRST FLOOR CONSTRUCTION ALONG THE BAY SECTION.



A CELLAR IS PROVIDED TO THE LH HALF OF THE PROPERTY SET BEHIND AND BELOW THE FRONT VERANDA AT GROUND FLOOR LEVEL. THE INTERNAL GROUND FLOOR CONSTRUCTION IS A SUSPENDED TIMBER JOIST INCLUDING SLEEPER WALL IN THE RH LIVING ROOM UNDERFLOOR VOID.

 GCA CONSULTING ENGINEERS The Moat House 133 Newport Road Stafford. ST16 2EZ	Project			Job Ref.	
	17 HARTINGTON STREET, LEEK			31658	
	Section			Sheet no./rev.	
FRONT FACADE TEMPORARY SUPPORT			MS 2		
Calc. by	Date	Chk'd by	Date	App'd by	Date
CP	21/06/2008				

THE TEMPORARY SUPPORT FRAME SHALL COMPRISE

1. EXTERNAL LINE OF ADJUSTABLE PROPS (MINIMUM CODE SIZE 3 TO BS4075) PLACED AT 900mm AVERAGE CENTRES SET ON 250mm WIDE BY 100mm THICK SPREADER PLATE ON EXTERNAL DECK POSITIONED NOT MORE THAN 2.4METRES DISTANCE FROM THE BACK WALL ON THE VERANDAH. DIAGONAL VERTICAL AND HORIZONTAL BACING TO BE PROVIDED IN EVERY 4TH BAY
2. INTERNAL LINE OF SIMILAR PROPS PLACED IN THE RH LIVING ROOM SUPPORTED ON BEARER SET ON 152 x 152 x 30 UC BEAM POSITIONED AT OR JUST BELOW GROUND FLOOR LEVEL BUILT INTO THE EXTERNAL WALL CHEEKS OF THE FRONT BAY WINDOW.
3. LIFT FLOOR COVERINGS AND BOARDING IN BATHROOM AND MIDDLE FRONT ROOM TO ALLOW SHORT STOOLS TO BE ON GROUND FLOOR WALL AT 900mm CENTRES
4. PROVIDE THROUGH NEEDLE BEAMS (MINIMUM 152 X 89mm RSJ) SET AT FIRST FLOOR LEVEL + 500mm APPROX BETWEEN INTERNAL AND EXTERNAL LINE OF PROPS PASSED THROUGH THE INFILL LATHE AND BOARD PANELS AND FIXED STEADFASTLY TO TIMBER FRAME WITH BLOCKING PIECES AND
5. PROVIDE SECONDARY LINE OF PROPS SET BENEATH AND ABOVE THE PRECAST CONCRETE DECK TO SUPPORT FIRST FLOOR OVERHANG CEILING ACROSS VERANDAH USING SOLE AND HEADER TIMBER BEARER.
6. HEADER PLATES TO BE MINIMUM 150 X 150mm C24 EXTERIOR GRADE TIMBER SET CENTRAL ALL PROPS TO BE TIGHTENED AND SET VERTICAL

ALL WORKS TO COMPLY WITH BRE GOOD BUILDING GUIDE 15 & BS4074

**17 HARTINGTON STREET, LEEK
REPLACEMENT OF UPPER TIMBER FRAME SOLE PLATE BEAM
(JOB REF: 31654)**



PART EXPOSURE OF UPPER TIMBER FRAME AND SOLE PLATE BEAM

**17 HARTINGTON STREET, LEEK
REPLACEMENT OF UPPER TIMBER FRAME SOLE PLATE BEAM
(JOB REF: 31654)**



FRONT CORNER ELEVATION PRIOR TO WORKS

**17 HARTINGTON STREET, LEEK
REPLACEMENT OF UPPER TIMBER FRAME SOLE PLATE BEAM
(JOB REF: 31654)**



TEMPORARY SUPPORT SCAFFOLD – WORKS IN PROGRESS