SIDEBOTTOM
RICHARDSON
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PRELIMINARY STRUCTURAL REPORT

UPON

ROOF STRUCTURE

AT

PINCHBECK VICARAGE

SPALDING

LINCS

DETERMINED
PLAN

SRSC
25 MAR 2003
Ref 0388/03

Mr I. Williams
Maple House
Church Lane
Wyberton
Boston
PE21 7AF

PRELIMINARY STRUCTURAL REPORT

UPON

ROOF STRUCTURE

AT

PINCHBECK VICARAGE

SPALDING

LINCS

REFERENCE: 15103 **MARCH 2003**

INTRODUCTION

At the request of Mr I. Williams, we confirm having visited the property on the 7th March 2003, the purpose being to inspect the roof structure only and make a visual inspection of the structural elements.

Our comments are restricted to the timber roof framing only and not a full survey of the whole property, since this is beyond the scope of our present instructions.

The purpose of this report is to comment upon the present condition of the roof structure and make comments and recommendations upon basic repairs and long term performance of the timber roof framing.

At this stage we do not intend to prepare detailed calculations and details relating to specific requirements.

"COMMENTS AS SEEN"

This substantial property dates back some considerable time and has had various extensions and alterations over the years, some of which have affected the roof structure.

The floor level to the rear East room within the roof space has been lowered. This has allowed the roof to spread outwards, due to the tie having been removed at eaves level.

External brickwork is distorted above the front window and bows outwards, see photograph 1.

Internally a diagonal steel tie has been inserted within the room, in an attempt to arrest further movement, and a timber prop supports the roof below the window, see photograph 2.

The ceiling was removed along the front eaves line to reveal very wet and decayed timbers, see photograph 3, with dampness clearly apparent upon internal brickwork.

The dampness extends along the wall into the landing area which also has a lowered floor.

Steel straps are in place at eaves level around the substantial timbers that form the doorway, see photograph 4.

Within the roof space above the front West area of the house, remedial strengthening in the form of additional purlins and stud partitions have been added, see photograph 5.

These purlins extend along the full length of the front elevation and are supported by the central chimney stack.

Plasterboard is in place to the slope along the front elevation. To the inner roof slope the original lathe and reed ceilings remain.

Large areas of dampness are present within these areas where extensive damage and water ingress is visible, see photographs 6 & 7.

CONCLUSIONS

The roof structure has benefited from having been re-roofed in the past, since bituminous felt is present above original rafters.

With the exception of the East end of the house, where the floor has been lowered, the roof structure is typical of a house of this type and has adequately supported roof loads during its life time.

However, perhaps due to changed to the external brickwork by forming a parapet at eaves level, the water proof membrane has now failed.

This has caused decay in the form of wet rot to take place and the need for replacement timbers to be inserted.

It is therefore necessary to implement a complete overhaul of the roof covering and supports.

RECOMMENDATIONS

The whole of the roof covering should be removed and replaced with the same slates incorporating new felt and flashings throughout.

Careful consideration should be given to flashing details at eaves level and at the back of the parapet.

The original roof timbers should remain wherever possible, however, with the roof covering removed, all timbers can be inspected and removed if wet or decayed.

It will be necessary to treat all timbers against future insect and fungal attack.

Original timbers if decayed, should be removed 1.0m beyond signs of dampness etc and replaced with new sound timber adequately spliced or bolted to the existing member.

It will be necessary to introduce additional strengthening to the front West roof area.

New adequately sized timber purlins are required to both roof slopes, supported off the chimney stack and a new intermediate stud wall.

The stud wall should be supported by a steel beam within the floor space, which can also provide enhanced support to the floor joists.

Where the floor has been lowered to the rear of the house, substantial strengthening is required to arrest the outward spread at eaves level.

It is recommended that brickwork is removed in this region, above the first floor windows.

The wall can be rebuilt using reclaimed bricks and incorporating a stud partition to support the roof.

It will be necessary to provide new floor joists throughout this rear room, which are required to support roof loading.

SUMMARY

We feel the roof structure is now in a condition that necessitates extensive remedial action to take place so that the whole fabric of the house can be preserved.

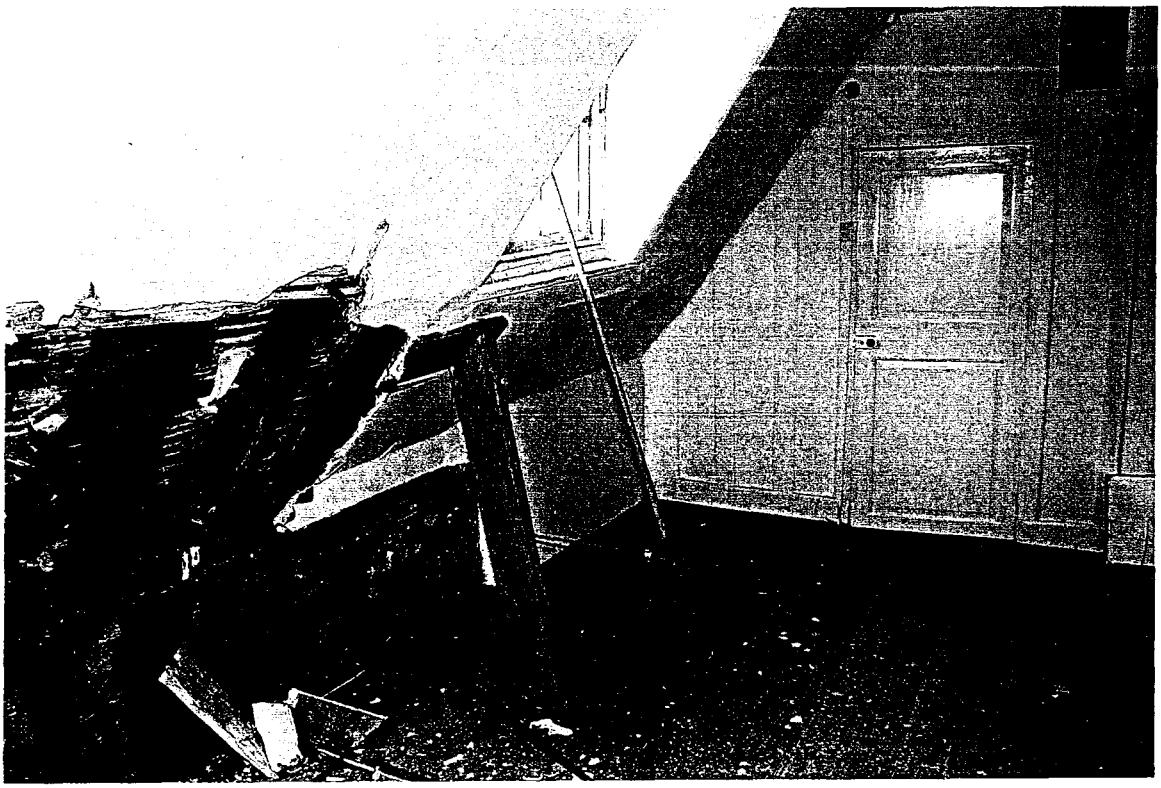
Nevertheless, by appointing suitable contractors familiar with this type of work, we see no reason why the roof cannot be repaired.

For and on behalf of **SIDEBOTTOM RICHARDSON CHENG LTD**

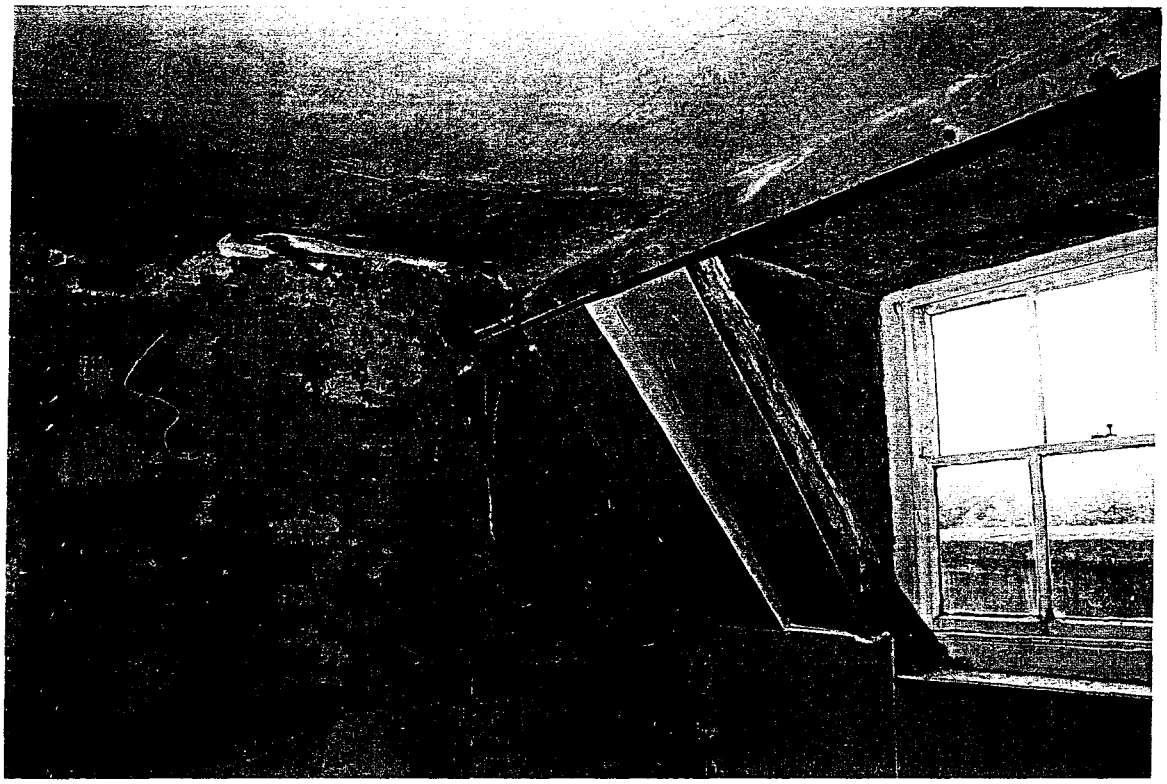
J.A. RICHARDSON I Eng. AMIStructE **19TH MARCH 2003**



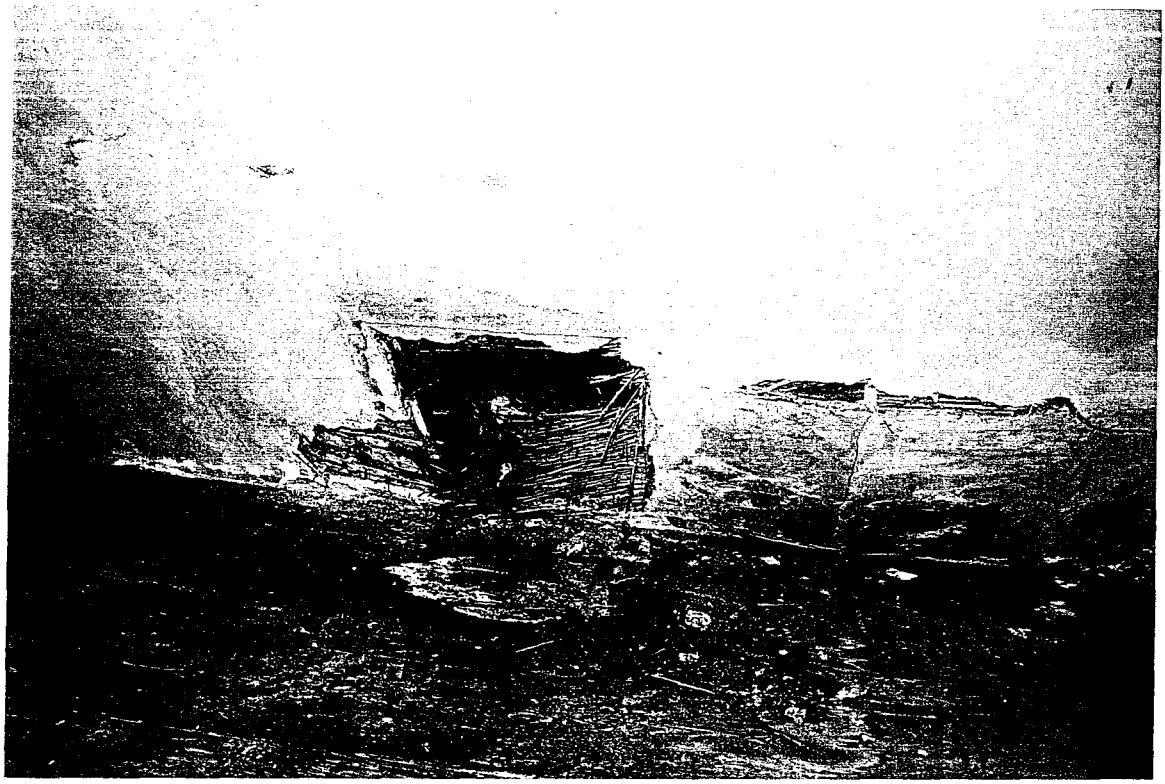
PHOTOGRAPH 1



PHOTOGRAPH 2



PHOTOGRAPH 5



PHOTOGRAPH 6



PHOTOGRAPH 7

DETE... PLAN

The Old Vicarage

Listed Building Planning Consent

February 2002

Planning ... 25 MAR 2003 Ref 0388/03

List of Proposed Restoration Works

Job Description	Details	Attachments
Exterior of Property		
New Roof	New Timbers/ Wall Plate etc as required New Roof covering in "Spanish Slate (To reduce weight Load to roof to stabilise building) New Ties etc as per Structural surveyors Report New Lead to be introduced to all valleys and gutters	Structural Surveyor report [redacted]
Chimneys	All Chimneys to be made waterproof and safe – rebuilt or re-pointed as required	
North Wall Gutter	New Gutter in Cast or Aluminium Identical to old unserviceable gutter	
Windows	All Existing windows to be refurbished/replaced as required – all new windows/window parts to be constructed in matching timber and window bars to be "Lambs Tongue" design as per original – where possible any original glass etc to be kept and used. **Contractor to agree specification etc with conservation officer as woodwork is exposed** New Windows to be inserted in bricked up windows in North Ground Floor The construction of these to be same construction as the original windows in property – i.e sliding sash single glaze with lambs tongue window bars. "Modern windows" on North facing wall to be replaced with new windows constructed as per original house windows.	
Doors	2 New Door to be constructed Design Identical to existing North Facing Door (Rear Hall Entrance)for the north facing door (Rear Hall Entrance) and the East Facing Door (Utility Room Entrance)	
Coal Bunker Opening	This to be bricked up and "False Doors" (Identical to current ones) to hide new brickwork.	
Damp Proof Course	Impregnated DPC to be injected in problem areas at north rear walls (Subject to advice of surveyor	
Bowed walls to South facing Wall	Ties to be incorporated to restrict any further movement	See Structural Surveyors Report
New Drains	New Drains to be constructed and introduced from north side around east side and link into	

	existing drain at south east corner of property	
New Soil Pipe	New soil Pipe to service 2 new bathrooms on north wall (Pipe to be placed in recess and "out of sight"	
Water Mains	New PVC Pipe to enter at utility room to replace existing galvanised	
Ground Floor Rooms		
	Old Coal Bunker(to be used as Wine Store)	
Dry Rot	All timbers to be removed and destroyed walls to be treated with suitable fungicide to stop future infestations	
DPC	Impregnated DPC to be injected as required	
Opening	To be Bricked up (see outside works)	
Ceiling	New Ceiling to be installed	
Door	New Six Panel Internal Door to match doors in rest of property	
	Utility Room	
Plumbing	To incorporate new Central Heating Boiler – balanced flue to Eastern wall Hot water storage Tank Plumbing for Washing Machine Tumble Drier new sink and storage cupboards with work top	
Floor	New tiled Surface floor	
	Pantry	
DPC	Impregnated DPC to be injected	
Concrete Slab	To be removed	
Shelving	To be renovated	
	Kitchen	
Chimney	Old Opening to be reopened	
Fittings	Existing Units to be Replaced with new units	
Doors	All doors to be replaced to match doors in rest of property – i.e. 6 panel doors	
	Dining Room	
New Fire Place		
New Ceiling Rose		
	Cloak Room	
Door	New Six Panel Internal Door to match doors in rest of property	
DPC	Impregnated DPC to be injected	
Skirting	New Skirting (appropriate to property) to replace rotten skirting	
Sanitary Ware	New Low Level Suite	
	Hall	
Dividing wall	To be Removed to make hall "as was"	
DPC	Impregnated DPC to be injected as required	
Skirting	Rotten timbers to be Replaced	
	Porch to South Wall	
Porch	To be dismantled/ rebuilt and missing coloured glass to be replaced	

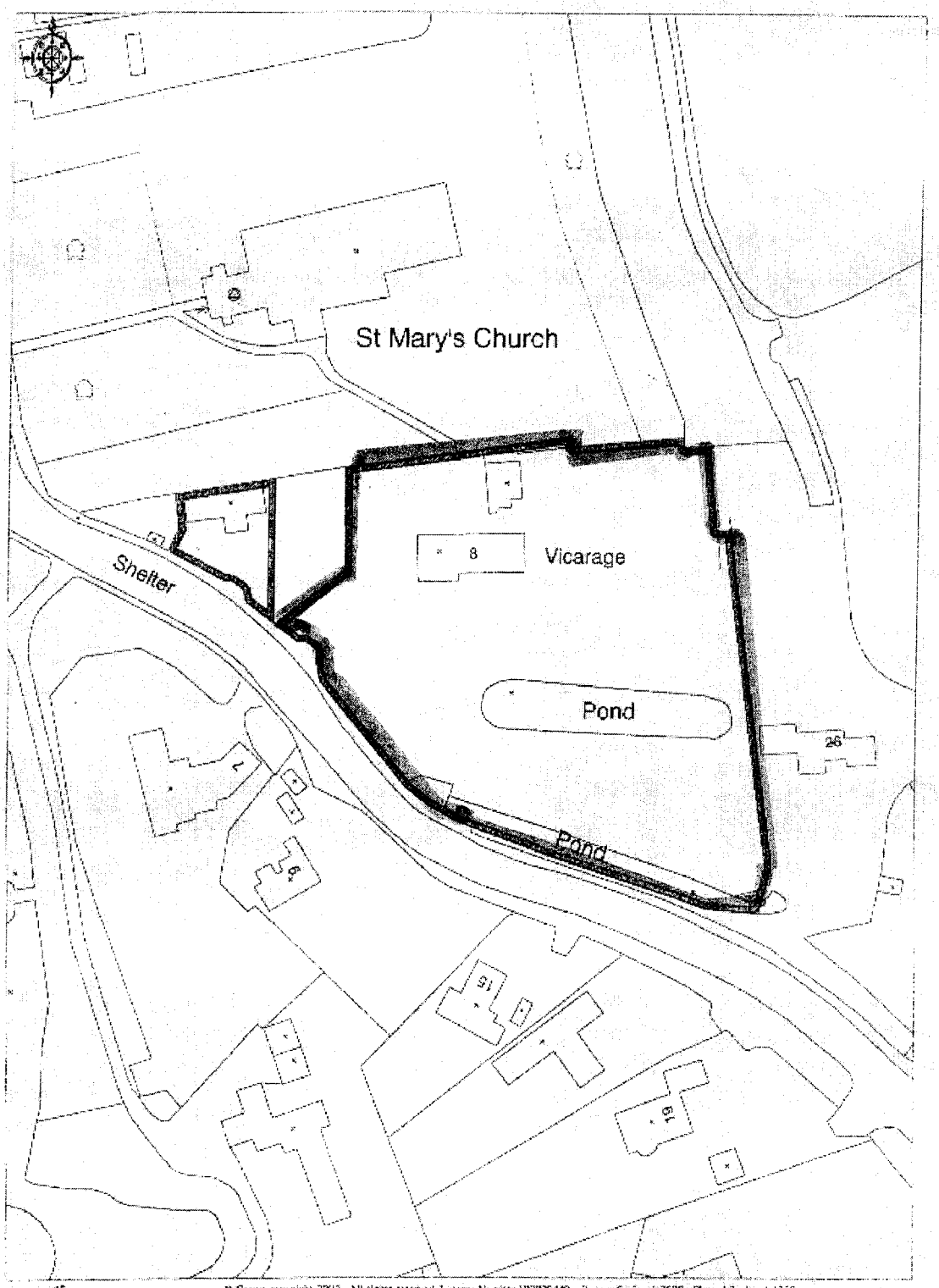
		Study
Fire Place	Inject DPC	
Shelving in Alcoves	To be removed	
		Lounge
Fireplace	New Fireplace	
Ceiling	New Ceiling Rose	
	First Floor Rooms	
		Landing
New Partition	New partition at east end of north landing	
Ceiling	Repair damaged Ceiling	
Skirting	New Skirting to areas without Skirting	
		First Bedroom (Large Room on West Wing)
New Ceiling	To replace water damaged ceiling	
		Second Bedroom (Smaller Room on West Wing)
Change to New Bathroom	Waste Pipes into new Down Pipe mentioned Earlier	
		Main Bathroom
New Suite	Keep Existing Bath & Basin (if salvageable) Install new high Level flush WC & Shower Cubicle.	
	Second Floor Rooms	
		Small Bedroom on west wing
Convert to en suite Bathroom	Waste Pipes into new Down Pipe mentioned Earlier	

Miscellaneous

- New Gas Central heating to be installed throughout property existing system to be removed.
- Additional power sockets, telephone points and TV ariel points to be fitted as required – all wiring to be discreet and run in floor voids and sunk in walls
- All wooden timbers to be treated for wood worm etc
- Property to be redecorated through out

THE VICARAGE - Spalding Road, Pinchbeck, Spalding, Lincolnshire

DETERMINED
PLAN



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Drg No: Y2K02/114
Revision B

FPDsavills

SHDC
Planning & Development
25 MAR 2003
Ref 0388/03

T. CLARKE & SONS (JOINERY) LTD

The Workshop Slippery Gowt Lane Wyberton Boston Lincs PE21 7AA
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Email:info@ tclarkejoinery.co.uk
Website: www.tclarkejoinery.co.uk

Specialists in Joinery Manufacturing

DETERMINED
PLAN

22nd April 2003

Mr. J Williamson
Maple House
Church Lane
Wyberton
Boston
PE21 7AF

Dear Mr. Willamson,

Re: Pinchbeck Vicarage

Works to be carried out to existing windows.

Reuse existing ironmongery & sash weights as condition permits.

To remove all windows to the north, south. East & west elevations. Hoard openings using MDF or sterling board to internal & external wall faces.

North wall, Ground floor

Remove existing glass & renew Top sash box & parting bead.

West wall

Renew box frames, cills & architrave's. Reuse existing sashes.

South wall left to right 1 – 5 Window 1 & 2.

Renew complete wrong mouldings and box frames rotten. Window 3 renew 2 sashes, architrave, box & parting beads. Windows 4 & 5 renew complete.

First Floor West & South Elevation

Renew windows using 6 existing sashes and glass.

East elevation 1st & 2nd Floor

Renew to original pattern as discussed at site meeting.

All the mouldings to match the original patterns, reuse all glass. Ensure all shutters sliding & hinged to operate as original.

Utile

Addendum

To manufacture replacement external door & frame as per existing, which is in a state of dereliction beyond repair.

Yours faithfully,

Tony Clarke
Joinery Manufacturer

Our Ref: CG/PEEA00805/3289R

Ventrolla®
SASH WINDOW RENOVATION SPECIALISTS

East Anglia
Unit 9A
Charles Industrial Estate
Stowupland Road
Stowmarket
Suffolk
IP14 5AH

Telephone 01449 774600
Facsimile 01449 774434
Website www.ventrolla.co.uk



Mr Ian Williams
Maple House
Church Lane
Wyberton
Boston
PE21 7AF

22 April 2003

SCHEDULE OF WORK

To supply and install the Ventrolla Perimeter Sealing System, together with remedial work and repairs as stated, based on re-inspection of windows carried out on 27 March 2003, as follows at **The Old Vicarage, Pinchbeck**:

Second Floor Attic

Window 2F/W1
Supply and fit (into existing opening) new casement vent window with 1no opening light and 1no fixed light, manufactured from selected treated softwood with hardwood, fully glazed, in a primer finish, complete with new stay and the Ventrolla Perimeter Sealing System

Window 2F/W2
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 2/2 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system

Window 2F/W3 (left hand)
new vertical sliding sash window as 2F/W2 above

Window 2F/W4 (right hand)
new vertical sliding sash window as 2F/W2 above

Window 2F/W5
new vertical sliding sash window as 2F/W2 above

Window 2F/W6
new vertical sliding sash window as 2F/W2 above

continued ... 2

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M. W. HARDY

Roofing and Building Contractor

48 ALBERT STREET, SPALDING, LINCOLNSHIRE PE11 2LD
Telephone 01775 766341
Fax 01775 725065
VAT Reg. No. 486 2569 04

MWH/ENQ108J

23 April 2003

MR IAN WILLIAMS
Church Lane
Wyberton
BOSTON
Lincs.
PE21 7AF

Dear Mr Williams

RE: THE OLD VICARAGE,PINCHBECK,SPALDING,LINCS.

Further to our telephone conversation of today we would confirm the roof loading in respect of the proposed Spanish Slate and the existing Welsh Tonne Random Slate.

The followig weights account for the slates only and do not include for lath/sarking felt etc.

500mmx250mm Natural Spanish Slate weight per square metre = 31 Kg

Random layed Welsh Tonne weight per square metre = 67Kg-93Kg

The varied weight range of the Welsh Tonne slate is due to them being laid in diminishing courses, heavier large slates at bottom (eaves), lighter small slates at top (ridge), the average weight mid rafter would be approximately 80Kg per metre square.

We trust the foregoing provides you with all the necessary details but should you need any further information please do not hesitate to contact us.

Yours Faithfully

M.W.Hardy

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DETERMINED
PLAN

Your Ref. Our Ref. 15103/JAR/SG Date. 22nd April 2003

Mr I. Williams
Maple House
Church Lane
Wyberton
Boston
Lincs
PE21 7AF

Dear Mr Williams

Re: **REMEDIAL WORK TO ROOF AT PINCHBECK VICARAGE, PINCHBECK, SPALDING**

Further to our recent discussions, we write to confirm our comment relating to the new roof covering.

Clearly it will not be possible to re-use the actual slates on the roof since they are damaged. Our comment refers to the use of slates or similar of reduced weight, which would be beneficial, rather than heavier concrete tiles or pantiles.

We trust the foregoing clarifies this point.

Yours sincerely
For and on behalf of **SIDEBOTTOM RICHARDSON CHENG LTD**

J.A. RICHARDSON

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Project No.	1503	
Sheet No.	1.	Rev.
Date	3/4/03	
Designer	A.S.	

PROJECT:

REMEDIAL WORK TO EXISTING ROOFING

THE OLD VICARAGE — PINCHBECK

SIDEBOTTOM RICHARDSON CHENG LTD
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Project No.	15103	
Sheet No.	2	Rev.
Date		
Designer		

PROJECT:

LOADING

(ROOF)

Superimposed	= 0.75	kN/m²
Slates	= 0.58	kN/m²
Timber Battens + Sarking Felt	= 0.04	kN/m²
—"— Rafter	= 0.26	kN/m²
Miscellaneous	= 0.05	kN/m²
	1.68	kN/m²

E.O Lining	= 0.20	kN/m²

(1ST FLOOR)

Superimposed	= 1.50	kN/m²
Timber Decking	= 0.13	kN/m²
—"— Joists	= 0.10	kN/m²
Ceiling + Services	= 0.20	kN/m²
	1.93	kN/m²

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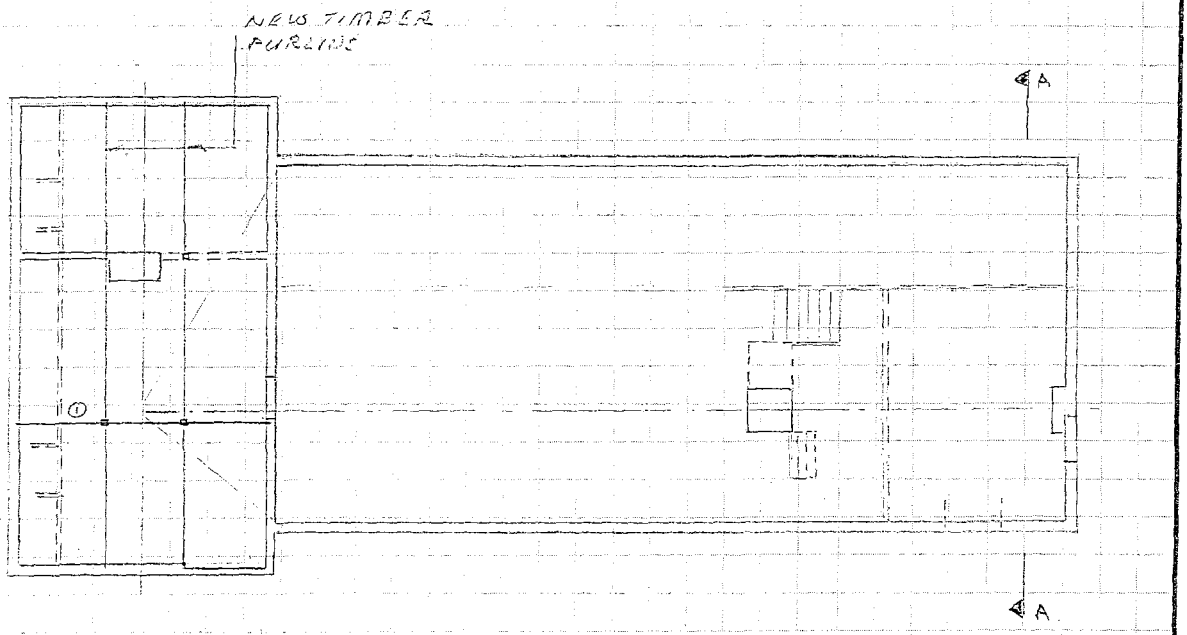
Project No. 1510?

Sheet No. 3 Rev.

Date

Designer

PROJECT:



PLAN

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Project No. 15105	
Sheet No. 4	Rev.
Date	
Designer	

PROJECT:

NEW PURLINS

W.D.L = (1.42 + 0.20) × 1.600 × 2.200 × 1.10 = 10.58 KN/m

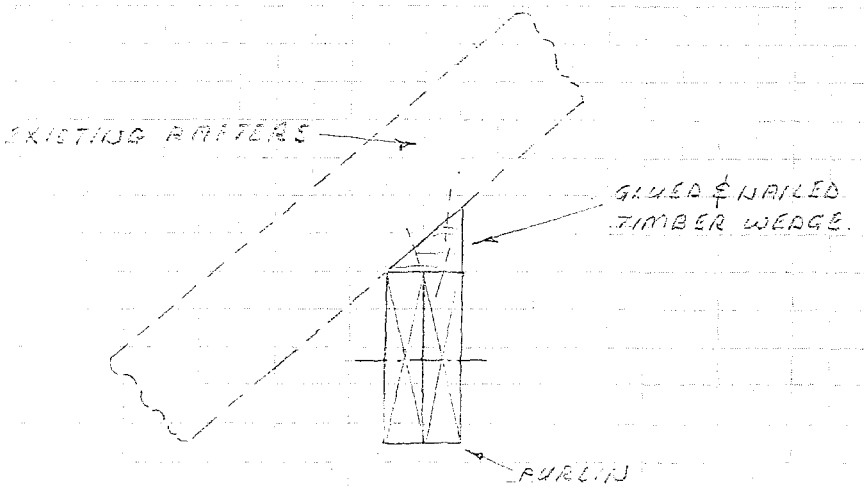
M.S.M = 0.125 × 10.58 × 3.200 = 4.23 KN.m

$Z = \frac{4.23 \times 10^6}{5.3 \times 1.25} = 638.40 \times 10^3\ mm^3$

$\delta_{max} = 0.003 \times 3200 = 9.60mm$

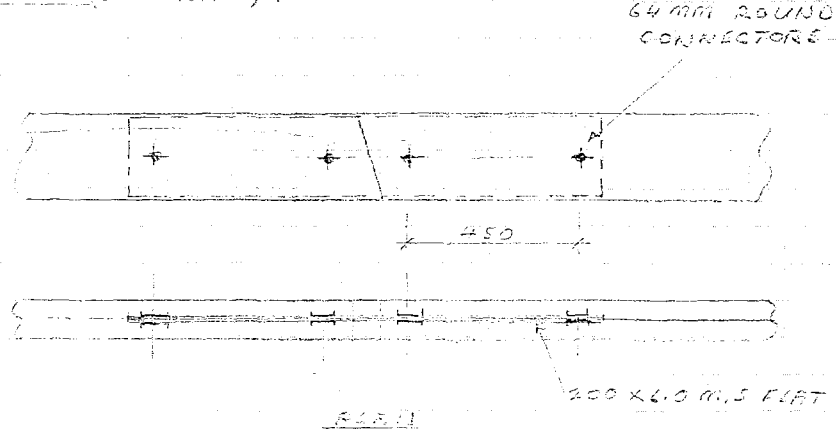
$I = \frac{5 \times 10.58 \times 10^3 \times 3200^3}{384 \times 5800 \times 9.60} = 81.97 \times 10^6\ mm^4$

USE 2/50 × 225 TIMBERS (GRADE SC3) BOLTED TOGETHER



SECTION

SPLICE (OPTIONAL).



PLAN

SIDEBOTTOM RICHARDSON CHENG LTD
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Project No. 15/03
Sheet No. 5 Rev.
Date
Designer

PROJECT:

TIMBER POSTS

F = 10.58 + 0.20 = 10.78 KN

Macc = 10.78 × 0.050 = 0.54 KNm SAY

L = 2.285 m.

$\sigma_{max} = \frac{0.54 \times 10^6}{167 \times 10^3} = 3.23\ N/mm^2$ $\sigma_{ca} = \frac{10.78 \times 10^3}{10.6 \times 10^3} = 1.02\ N/mm^2$.

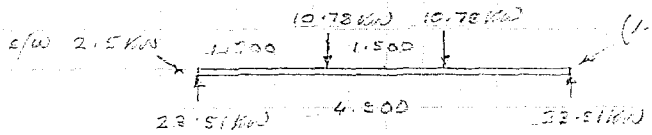
$\lambda_E = \frac{3.14^2 \times 5850}{(2285/28.0)^2} = 0.15$ $K_{12} = 0.952$

$Combined\ 1 = \frac{3.23}{5.3 \times 0.952\left(1 - \frac{1.5 \times 1.02}{9.15} \cdot 0.952\right)} + \frac{1.02}{6.80 \times 0.952} = 0.92 < 1.25$ OK.

USE TIMBER SECTION 100 × 100 (GRADE SC3).

NOTE: STRAP/TIE POST(S) TOP & BOTTOM TO EXISTING.

BEAM ①



s/w 2.5 KN/m

$(1.93 + 1.0) \times 1.600 \times 4.500 = 22.27\ KN$ SAY.

M max = (22.51 × 2.450) − (10.78 × 0.750) − (10.78 × 2.450)(½) = 33.82 KNm.

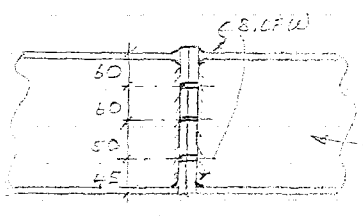
TRY 203 × 203 × 46 UC

$Z_{req} = \frac{4.500 \times 10^6}{511} = 35.09$ $\frac{D}{T} = 22.3$ $\therefore p_{bc} = 136.4\ N/mm^2$

$f_{bc} = \frac{33.82 \times 10^3}{449.2} = 75.51\ N/mm^2$ OK

USE 203 × 203 × 46 UC

SPLICE



$M_{BOLT} = 2(6 \times 5(170) + 4 \times 5(120))^{75} = 34.5\ KNm$ OK.

4 No M20 GR 8.8 BOLTS @ 70 c/c. THRO' 20 MM THK END PLATES

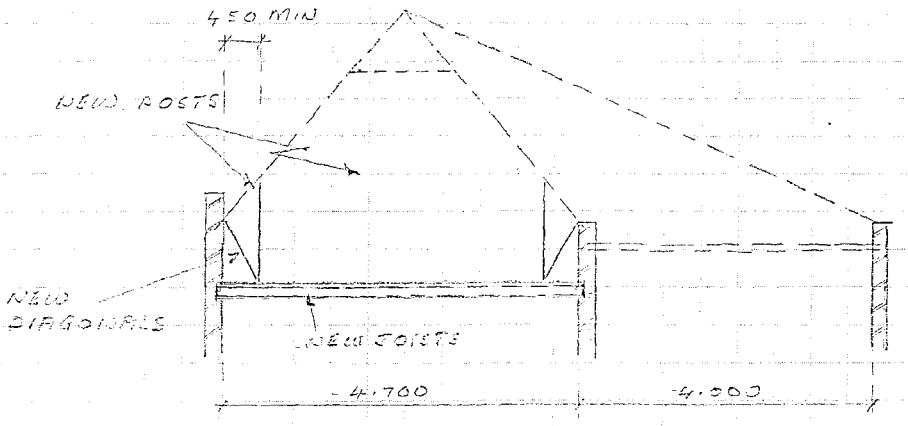
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Project No.	15103
Sheet No.	6
Rev.	
Date	
Designer	

PROJECT:

EAST AREA REMEDIAL



SECTION A-A

LOAD ANALYSIS LEAN-TO RAFTER

U2 = 1.68 x 0.450 x 6.350 = 4.80 KN

RL @ RR = 2.40 KN

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Project No. 1513

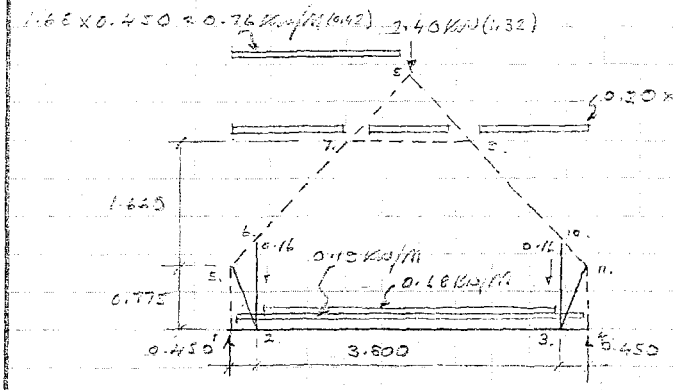
Sheet No. 7 Rev.

Date

Designer

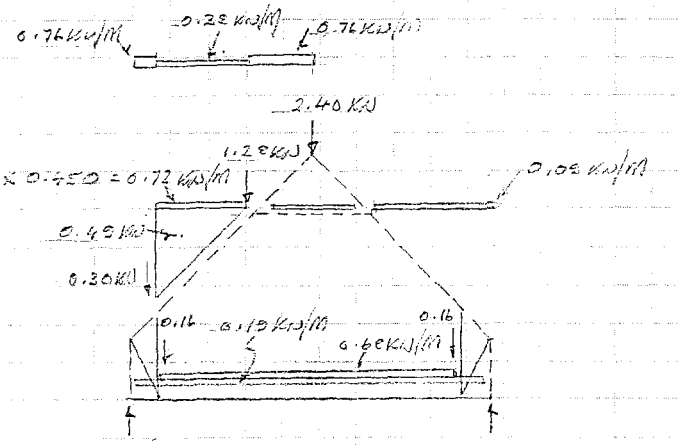
PROJECT:

ROOF SUPPORT SYSTEM (INTERMEDIATE)



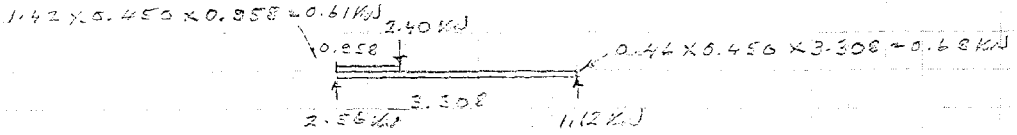
ANALYSIS BY COMPUTER (SEE LATER)

ROOF SUPPORT SYSTEM (ADJACENT DORMER)



T103A

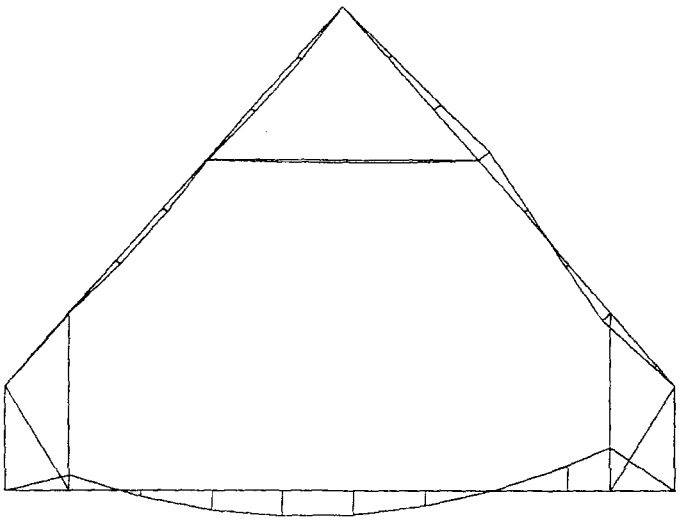
0.26 + 0.20 = 0.46 KN/M²



ANALYSIS BY COMPUTER (SEE LATER)

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Job Ref : 15103
Sheet : 8
Made by : A.S
Date : 04 April 2003 / Ver. 2001.12
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Loading Case 01 : DEAD+SUPERIMPOSED
Bending Moment Diagram (Major and Minor Axes) - (Full Frame) - Front View
5 kN.m = 1m

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Nodal Deflections (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Nodal Def. (mm and Degrees)				Node	Nodal Def. (mm and Degrees)			
	δ X →	δ Y ↑	ΦZ ↗	δ XY		δ X →	δ Y ↑	ΦZ ↗	δ XY
1	0.00	0.00	-0.06	0.00	2	0.00	-0.58	-0.09	0.58
3	0.08	-0.18	0.05	0.20	4	0.08	0.00	0.00	0.08
5	0.76	0.00	-0.08	0.76	6	1.38	-0.59	-0.05	1.50
7	1.37	-0.71	0.03	1.55	8	0.39	0.04	0.07	0.39
9	1.31	0.90	-0.03	1.59	10	-0.06	-0.14	-0.02	0.15
11	0.02	0.00	0.03	0.02					

Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
1	1	0.000C	-1.371	0.000		0.027
	2	0.000C	-1.456	-0.636		@ 0.261
2	1	6.206C	0.000	0.000		0.000
	5	6.206C	0.000	0.000		@ 0.504
3	5	3.400C	0.234	0.000	0.078	0.042
	6	3.107C	-0.011	0.078	@ 0.666	@ 0.386
4	6	3.329C	0.181	0.078	0.124	0.321
	7	2.715C	-0.334	-0.034	@ 0.513	@ 0.674
5	7	1.957C	0.257	-0.034	0.071	0.182
	8	1.399C	-0.211	0.000	@ 0.819	@ 0.774
6	8	1.804C	-0.129	0.000		0.381
	9	1.892C	-0.203	-0.248		@ 0.879
7	9	2.651C	0.388	-0.248		0.115
	10	2.803C	0.261	0.228		@ 1.128
8	10	3.472C	-0.294	0.228		0.088
	11	3.545C	-0.355	0.000		@ 0.302
9	4	6.395C	0.000	0.000		0.000
	11	6.395C	0.000	0.000		@ 0.248
10	2	2.002T	1.542	-0.636	0.730	2.781
	3	2.002T	-1.764	-1.059	@ 1.786	@ 1.824
11	3	0.000C	2.397	-1.059		0.046
	4	0.000C	2.312	0.000		@ 0.189
12	7	0.940C	0.201	0.000	0.096	1.474
	9	0.940C	-0.201	0.000	@ 0.958	@ 0.958
13	2	0.290C	0.000	0.000		0.000
	6	0.290C	0.000	0.000		@ 1.247
14	3	0.874T	0.000	0.000		0.000
	10	0.874T	0.000	0.000		@ 1.287

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Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
15	2	3.987T	0.000	0.000		0.000
	5	3.987T	0.000	0.000		@ 0.744
16	3	3.987T	0.000	0.000		0.000
	11	3.987T	0.000	0.000		@ 0.807

Support Reactions (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Support Reactions (kN and kN.m)			Node	Support Reactions (kN and kN.m)		
	Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)		Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)
1	0.000	4.835	0.000	4	0.000	4.083	0.000
Total	0.000	8.918	0.000				

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Nodal Deflections (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Nodal Def. (mm and Degrees)				Node	Nodal Def. (mm and Degrees)			
	δ X →	δ Y ↑	ΦZ ↗	δ XY		δ X →	δ Y ↑	ΦZ ↗	δ XY
1	0.00	0.00	-0.09	0.00	2	0.00	-0.89	-0.12	0.89
3	0.11	0.38	0.00	0.40	4	0.11	0.00	-0.07	0.11
5	1.23	0.00	-0.11	1.23	6	2.33	-0.99	-0.15	2.53
7	4.28	-2.82	0.02	5.12	8	1.15	-0.26	0.24	1.18
9	4.19	2.38	-0.01	4.82	10	1.70	0.44	-0.11	1.76
11	1.07	0.00	-0.04	1.07					

Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
1	1	0.000C	-0.445	0.000		0.009
	2	0.000C	-0.530	-0.219		@ 0.261
2	1	7.120C	0.000	0.000		0.000
	5	7.120C	0.000	0.000		@ 0.643
3	5	3.740C	-0.173	0.000		0.065
	6	3.447C	-0.418	-0.207		@ 0.414
4	6	5.033C	0.919	-0.207	0.317	0.677
	7	3.799C	-0.117	0.304	@ 1.245	@ 0.850
5	7	1.743C	0.030	0.304	0.305	0.746
	8	1.186C	-0.438	0.000	@ 0.089	@ 0.670
6	8	2.065C	-0.301	0.000		0.811
	9	2.153C	-0.375	-0.503		@ 0.864
7	9	3.229C	0.595	-0.503		0.391
	10	3.381C	0.468	0.276		@ 0.454
8	10	4.381C	-0.363	0.276		0.106
	11	4.454C	-0.424	0.000		@ 0.302
9	4	8.050C	0.000	0.000		0.000
	11	8.050C	0.000	0.000		@ 0.705
10	2	2.532T	1.301	-0.219	0.754	2.635
	3	2.532T	-2.005	-1.557	@ 1.482	@ 1.596
11	3	0.000C	3.502	-1.557		0.067
	4	0.000C	3.416	0.000		@ 0.189
12	7	1.434C	0.201	0.000	0.096	1.474
	9	1.434C	-0.201	0.000	@ 0.958	@ 0.958
13	2	2.370C	0.000	0.000		0.000
	6	2.370C	0.000	0.000		@ 1.064
14	3	1.306T	0.000	0.000		0.000
	10	1.306T	0.000	0.000		@ 0.722

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Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
15	2	5.043T	0.000	0.000		0.000
	5	5.043T	0.000	0.000		@ 0.789
16	3	5.043T	0.000	0.000		0.000
	11	5.043T	0.000	0.000		@ 0.538

Support Reactions (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Support Reactions (kN and kN.m)			Node	Support Reactions (kN and kN.m)		
	Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)		Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)
1	0.000	6.675	0.000	4	0.000	4.633	0.000
Total	0.000	11.308	0.000				

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MasterFrame Data File
Loading Cases and Load Combination

Load Group Labels

Load Group UT Unity Load Factor (All Cases)
Load Group N1

Loading Case 01 : DEAD+SUPERIMPOSED

Load Combination + 1.00 UT + 1.00 N1

The Nodal Co-ordinates

Node	X (m)	Y (m)	Z (m)	Node	X (m)	Y (m)	Z (m)
1	0.000	0.000	0.000	2	0.450	0.000	0.000
3	4.250	0.000	0.000	4	4.700	0.000	0.000
5	0.000	0.775	0.000	6	0.450	1.313	0.000
7	1.392	2.435	0.000	8	2.350	3.575	0.000
9	3.308	2.435	0.000	10	4.250	1.313	0.000
11	4.700	0.775	0.000				

Member Properties

Members 1, 10-11
M ... ... 75x200 E 006.0E6 G 00.4E6
Members 2, 9
M ... ... 450x215 E 026.0E6 G 10.0E6
Members 3-8
M ... ... 50x150 E 006.0E6 G 00.4E6
Members 12-16
M ... ... 50x100 E 006.0E6 G 00.4E6

Member Loading

Members 1, 11
N1 UDLY -000.190 (kN/m)
Members 2, 9, 13-16
Member 3
N1 UDLY -000.760 (kN/m)
N1 UDLY -000.090 (kN/m)
Member 4
N1 UDLY -000.380 (kN/m)
N1 UDLY -000.090 (kN/m)
N1 UDLY -000.720 (kN/m)
N1 TY1 -000.490 (kN)
Member 5
N1 UDLY -000.760 (kN/m)
Member 6
N1 UDLY -000.120 (kN/m)
Members 7-8, 12
N1 UDLY -000.120 (kN/m)
N1 UDLY -000.090 (kN/m)
Member 10
N1 UDLY -000.190 (kN/m)
N1 UDLY -000.680 (kN/m)

Member End Releases

1	⊙○○	⊙⊙⊙	2	⊙⊙⊙	⊙○○	6	⊙○○	⊙⊙⊙	9	⊙⊙⊙	⊙○○
11	⊙⊙⊙	⊙○○	12	⊙○○	⊙○○	13	⊙○○	⊙○○	14	⊙○○	⊙○○
15	⊙○○	⊙○○	16	⊙○○	⊙○○						

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Job Ref : 15103
Sheet : 14
Made by : A.S
Date : 04 April 2003 / Ver. 200 1.12
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Nodal Loading and Support Conditions

NODE 8
N1 Ls +0000.000 -0002.400 +0000.000 +0000.000 +0000.000 +0000.000
NODES 2-3
N1 Ls +0000.000 -0000.160 +0000.000 +0000.000 +0000.000 +0000.000
NODE 6
N1 Ls +0000.000 -0000.300 +0000.000 +0000.000 +0000.000 +0000.000
NODE 7
N1 Ls +0000.000 -0001.280 +0000.000 +0000.000 +0000.000 +0000.000
NODE 1
UT Rs 1 1 1 0 0 0
NODE 4
UT Rs 0 1 0 0 0 0 (Vertical Restraint)

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Project No. 15103
Sheet No. 15 Rev.
Date
Designer

PROJECT:

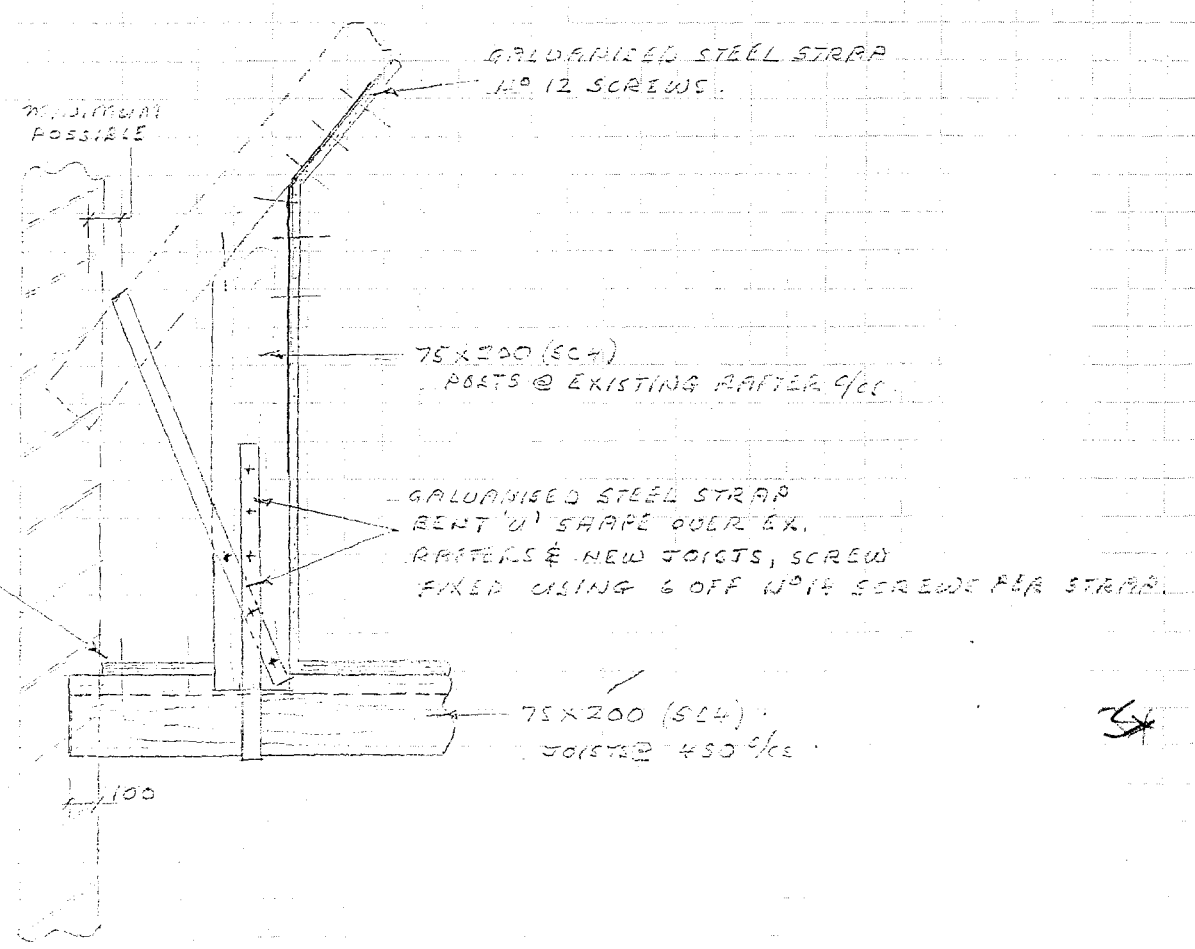
NEW FLOOR JOISTS

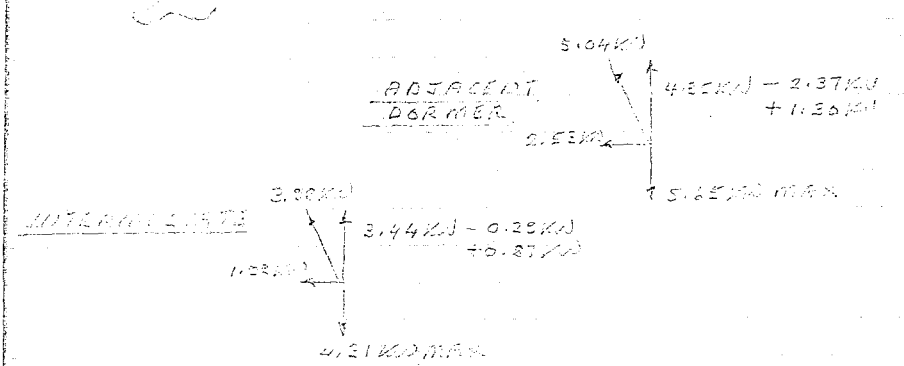
M = 1.55 KNm

$Z = \frac{1.55 \times 10^3}{7.5 \times 11} = 187.87 \times 10^3 \text{ mm}^3$

$\delta_{LIM} = 0.003 \times 4700 = 14.10$ mm OK

USE TIMBER SECTION 75 x 200 (GRADE SC4) @ 450 c/c.





SRC SIDEBOTTOM RICHARDSON CHENG LTD
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JOB NO 15103
SHEET NO. 16
DATE
PREPARED

GENERAL MATERIALS SPECIFICATION

All designated lintels or beams to be in Grade Fe 430B Mild Steel in accordance with BS EN 10 025.

All brickwork to have a minimum Compressive Strength of 20 N/mm² and bonded with a 1:1:6 mortar.

All loadbearing blockwork walls to be solid and have a minimum Compressive Strength of 3.5 N/mm² and bonded with a 1:1:6 mortar.

Any structural timber to be G.S. Grade, Strength Class SC3, in accordance with BS 5268 Part 2, 194 or as specified by specialist supplier.

Any lintels or beams supported by blockwork walls to sit on concrete padstones, or Engineering Bricks (3 courses deep).

Mass concrete foundations to be minimum Grade C20 with a minimum O.P.C. content of 22 Kg/cu.m and a water cement ratio of 0.60.

Reinforced foundations to be minimum Grade C35 with a minimum O.P.C. content of 300 Kg/cu.m and a water cement ratio of 0.60 with 20mm coarse aggregate.

Reinforcing bars to be High Yield Steel with a minimum yield strength of 460 N/mm² in accordance with BS 4461, or Mild Steel with a minimum yield strength of 250 N/mm² in accordance with BS 4449.

Reinforcing Mesh Fabric to be High Yield with a minimum yield strength of 460 N/mm² in accordance with BS 4483.

Minimum cover to reinforcement to be 75mm.

Concrete to be compacted using an immersion vibrator to form a consistent dense material. No concrete to be poured if the ambient temperature is less than 2 degrees Centigrade.

Minimum lap to reinforceing bars to be 40 times bar diameter unless noted otherwise.

Minimum lap to mehs fabric to be 300mm unless noted otherwise.

Window 1F/W6
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new top sash
Re-putty as necessary

Window 1F/W7
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new bottom sash
Renew meeting rail to top sash
Re-putty as necessary

Window 1F/W8
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Re-putty as necessary

Window 1F/W9
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new top and bottom sashes
(WINDOW IS CURRENTLY COVERED BY WALL INSIDE - THIS IS A PROVISIONAL COST SUM AS CANNOT BE INSPECTED UNTIL OPENED UP)

Window 1F/W10
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Carry out VR90 repair to left hand top tenon area
Re-putty as necessary

Window 1F/W11
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Repair 2no tenon joints to bottom sash
Carry out fill repairs to top and bottom sashes
Re-putty as necessary

continued ... 4

Window 1F/W12
Supply and fit (into existing opening) new casement vent window with 1no opening light and 1no fixed light, manufactured from selected treated softwood with hardwood, fully glazed, in a primer finish, complete with new stay and the Ventrolla Perimeter Sealing System

Window 1F/W13
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Hack out and reglaze 1no pane in 3mm character glass
Re-putty as necessary

Window 1F/W14
1no pivot window Ventrolla Treat
Supply and fit new fanlight catch

Window 1F/W15
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 6/6 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system
(DESIGN CHANGE - EXISTING WINDOW IS CASEMENT VENT)

Ground Floor

Window GF/W1
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new top and bottom sashes
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

Window GF/W2
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new top and bottom sashes
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

continued ... 5

Window GF/W3
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new bottom sash
Repair 2no tenon joints to top sash
Re-putty as necessary

Window GF/W4
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Carry out fill repair to bottom sash
Carry out fill repair to cill
Hack out and reglaze 2no panes in 3mm character glass
Re-putty as necessary

Window GF/W5
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Hack out and reglaze 1no pane in 3mm character glass
Re-putty as necessary

Window GF/W6
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Repair 1no tenon joint to right hand side of bottom sash
Re-putty as necessary

Window GF/W7
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Repair 1no tenon joint to top sash
Hack out and reglaze 2no panes in 3mm character glass
Re-putty as necessary

Window GF/W8
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Hack out and reglaze 1no pane in 3mm character glass
Re-putty as necessary

continued ... 6

Window GF/W9
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Re-putty as necessary

Window GF/W10
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Re-putty as necessary

Window GF/W10A
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 6/6 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system

Window GF/W10B
new window as GF/W10A above

Window GF/W11
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 4/4 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system
(DESIGN CHANGE - EXISTING WINDOW IS CASEMENT VENT)

Window GF/W12
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 2/2 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system
(DESIGN CHANGE - EXISTING WINDOW IS CASEMENT VENT)

Window GF/W13
Supply and fit (into existing opening) new fixed light manufactured from selected treated softwood with hardwood cill, with 6no panes glazed in 6.4mm laminated glass

continued ... 7

Garage

Supply and fit (into existing opening) 3no new fixed lights manufactured from selected treated softwood with hardwood cill (2no with 9no panes 1no with 6no panes), glazed in clear float glass

Notes

New sashes would be manufactured in selected, treated softwood.

New cills would be of iroko hardwood with linings and cheeks in selected, treated softwood.

Unless otherwise stated, white section will be used on the interior and exterior of all windows.

During the installation and included in the quoted price, all sashcords will be replaced.

Our price includes all add-weights which may be required to re-balance sashes. However, occasionally, where a window is inoperable, we find on stripping out that balance weights have been removed; should this be the case we can install new weights.

Should any faulty pulleys be encountered they will be replaced with our standard pulleys. will be Brass faced pulleys, if required, can be provided.

We only remove paint to facilitate easy movement of sashes and alignment, not for paint surface preparation. Any new joinery and planed surfaces will be left in white primer finish for final painting by others, unless otherwise stated.

Our price does not include any making good of external or internal masonry or plasterwork which may become dislodged during our installation as we consider this to be builder's or decorator's work.

We have not included for the removal or reinstatement of any fixtures or fittings, such as secondary glazing, curtains, blinds, pelmets, heat duct casings or radiators, etc, which may obstruct or prevent the works from being carried out as described above.

First Floor

Window 1F/W1
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new top and bottom sashes
Repair right hand outer cheek
Carry out VR90 fill repair to cill
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

Window 1F/W2
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new top and bottom sashes
Carry out VR90 fill repair to cill
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

Window 1F/W3
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Carry out VR90 repair to left hand tenon area to bottom sash
Repair meeting rail to bottom sash
Re-putty as necessary

Window 1F/W4
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Renew meeting rail to top sash
Re-putty as necessary

Window 1F/W5
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Carry out VR90 repairs to 2no tenon areas to bottom sash
Renew meeting rail to top sash
Hack out and reglaze 1no pane in 3mm character glass
Re- putty as necessary

continued ... 3

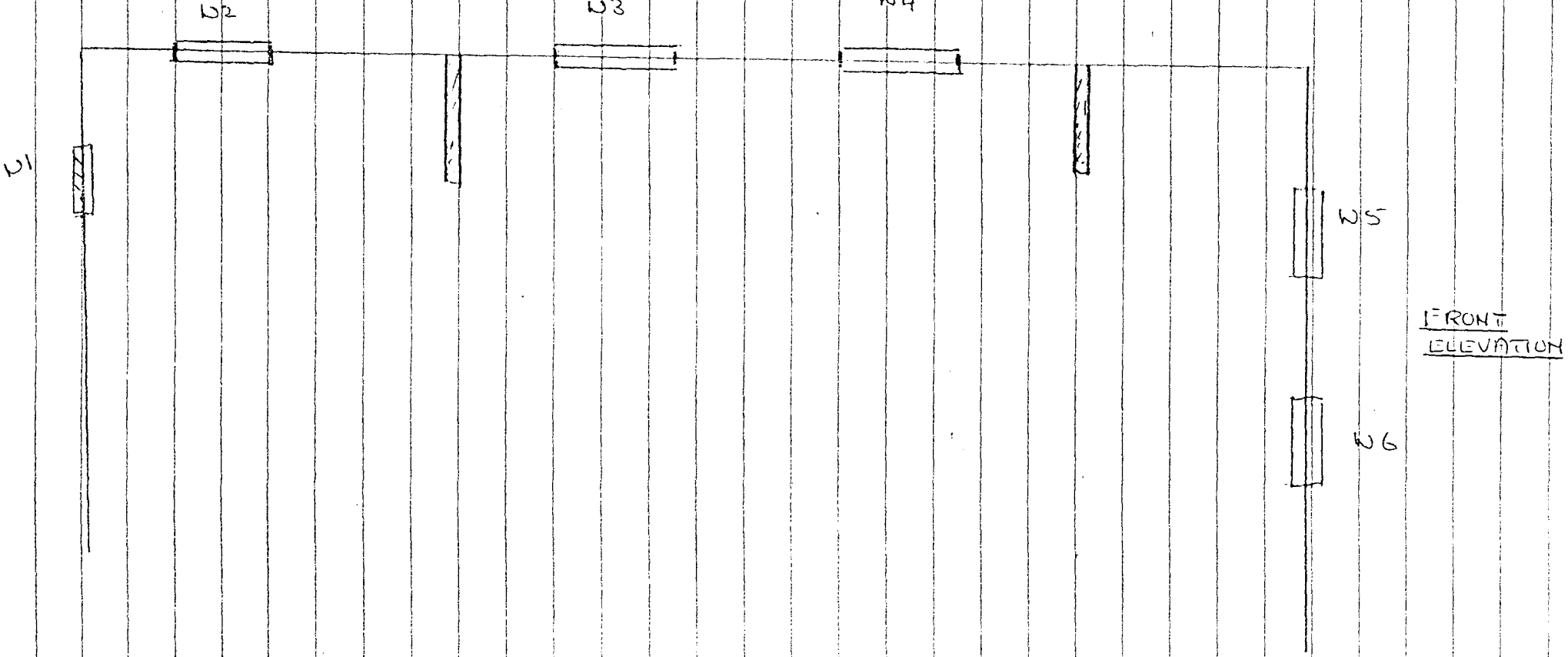
SITE: THE OLD RECTORY
PINCHBECK
LINCS

ATTIC
2F

SOUTH ELEVATION

VENTROLLA
EAST
ANGLIA

27/03/03



FRONT
ELEVATION

OUR REF: CG/PEEA00805/3289R

Ventrolla®
SASH WINDOW RENOVATION SPECIALISTS

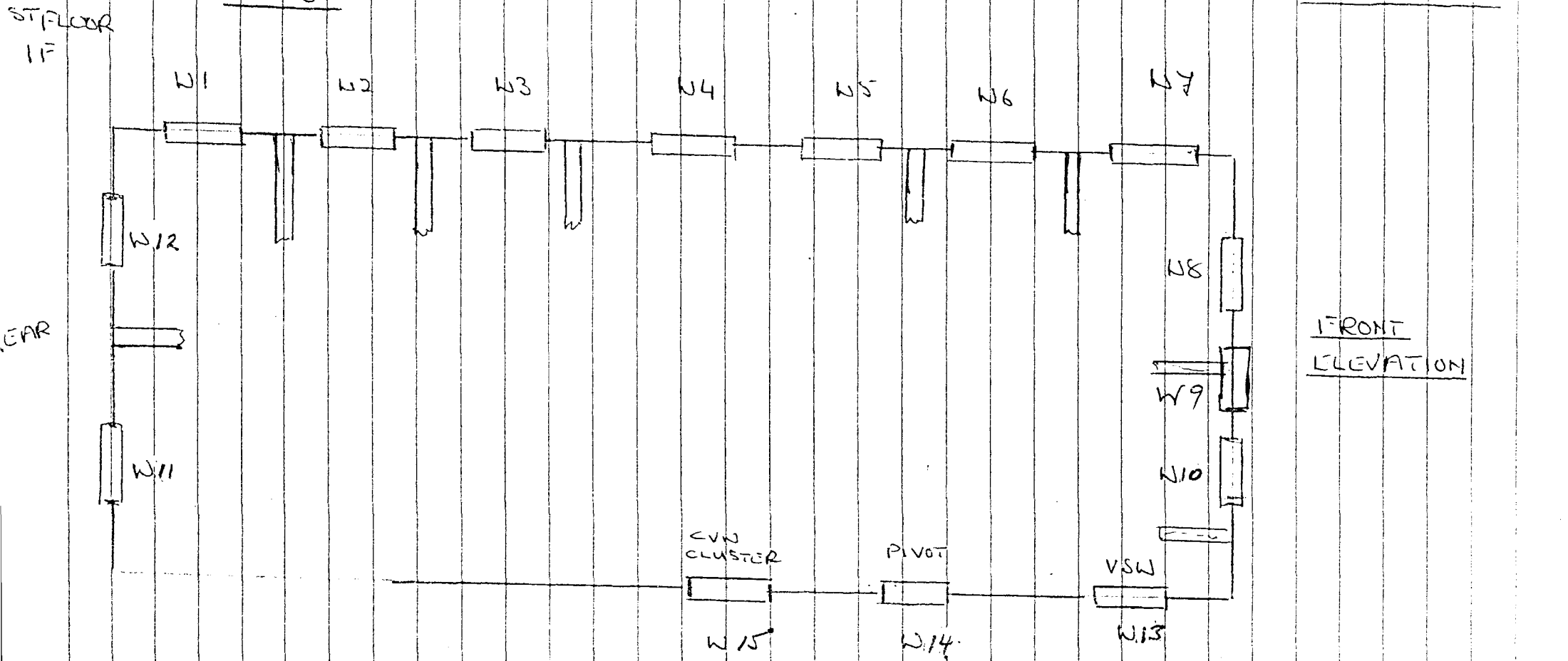
CLIENT: MR WILLIAMS

SITE: THE OLD RECTORY
PINCH BECK
LINCS

SOUTH ELEV

VENTROLLA
EAST
ANGLIA

27/03/03



1ST FLOOR
FF

EAR

1ST FRONT
ELEVATION

OUR REF: CG/PEEA 00805/3281

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SASH WINDOW RENOVATION SPECIALISTS

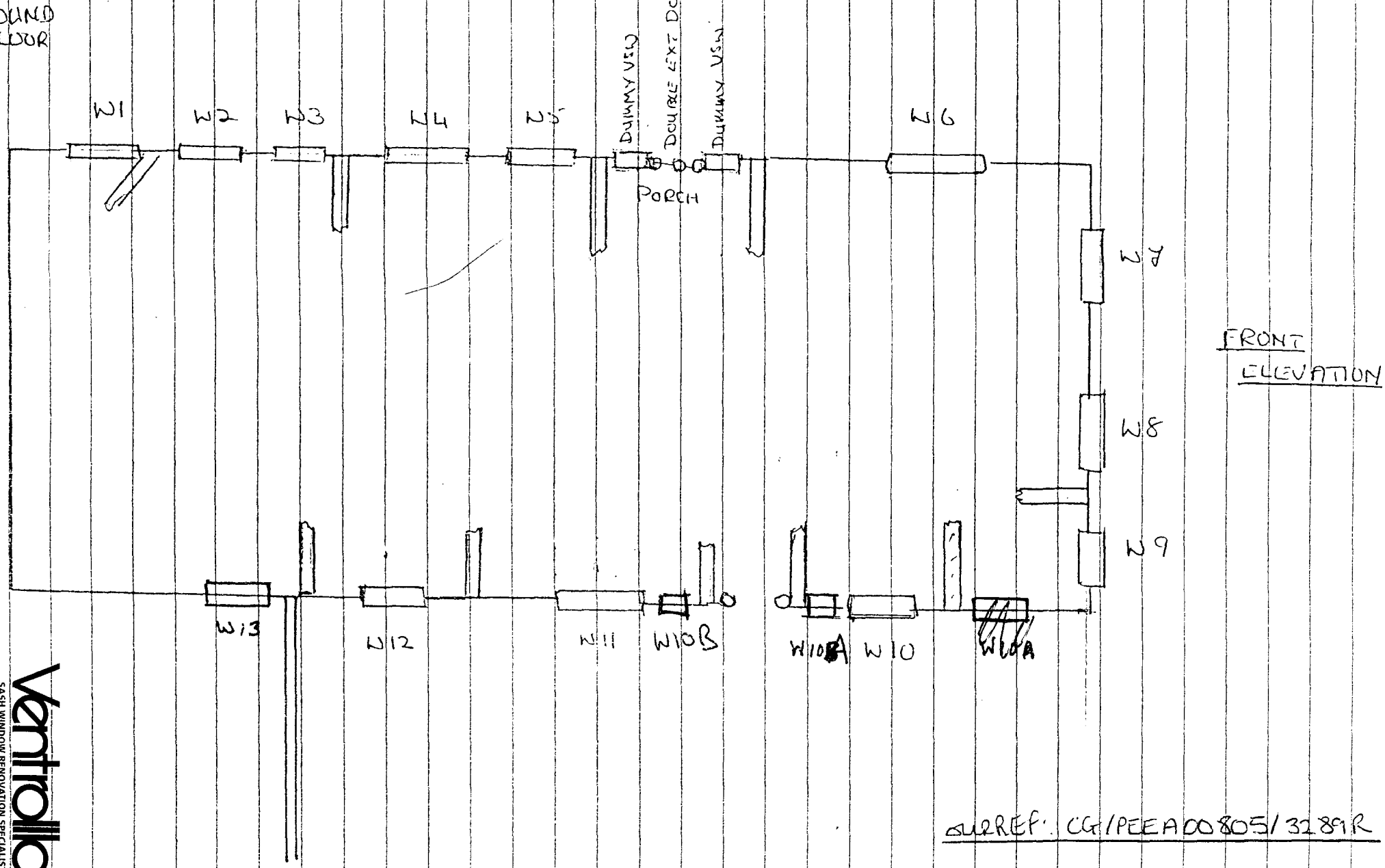
SITE : THE OLD RECTORY
PINCHBECK
LINCS

SOUTH ELEVATION

VENTROLLA
EAST
ANGLIA

27/03/03

GROUND
FLOOR
GF

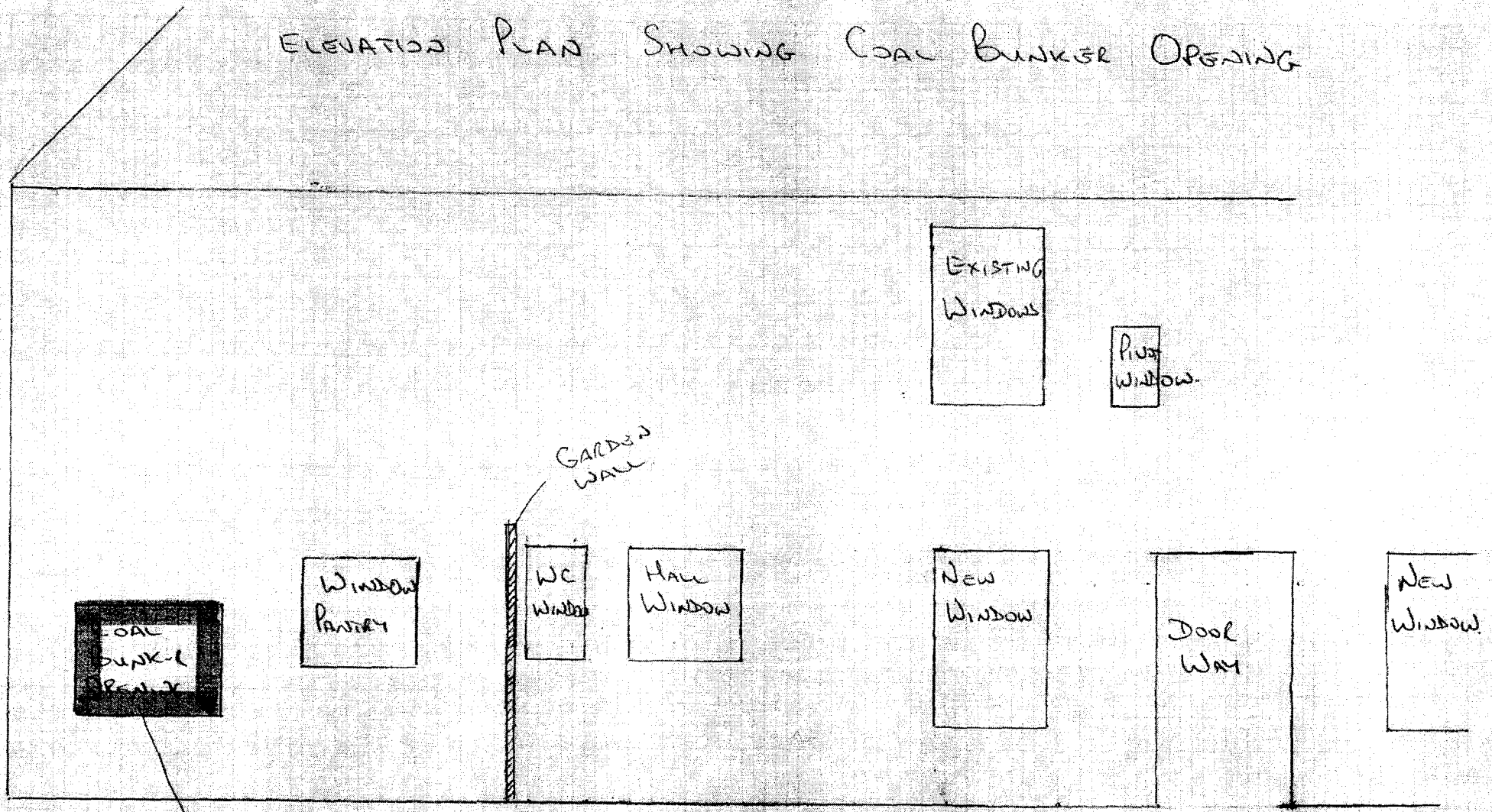


FRONT
ELEVATION

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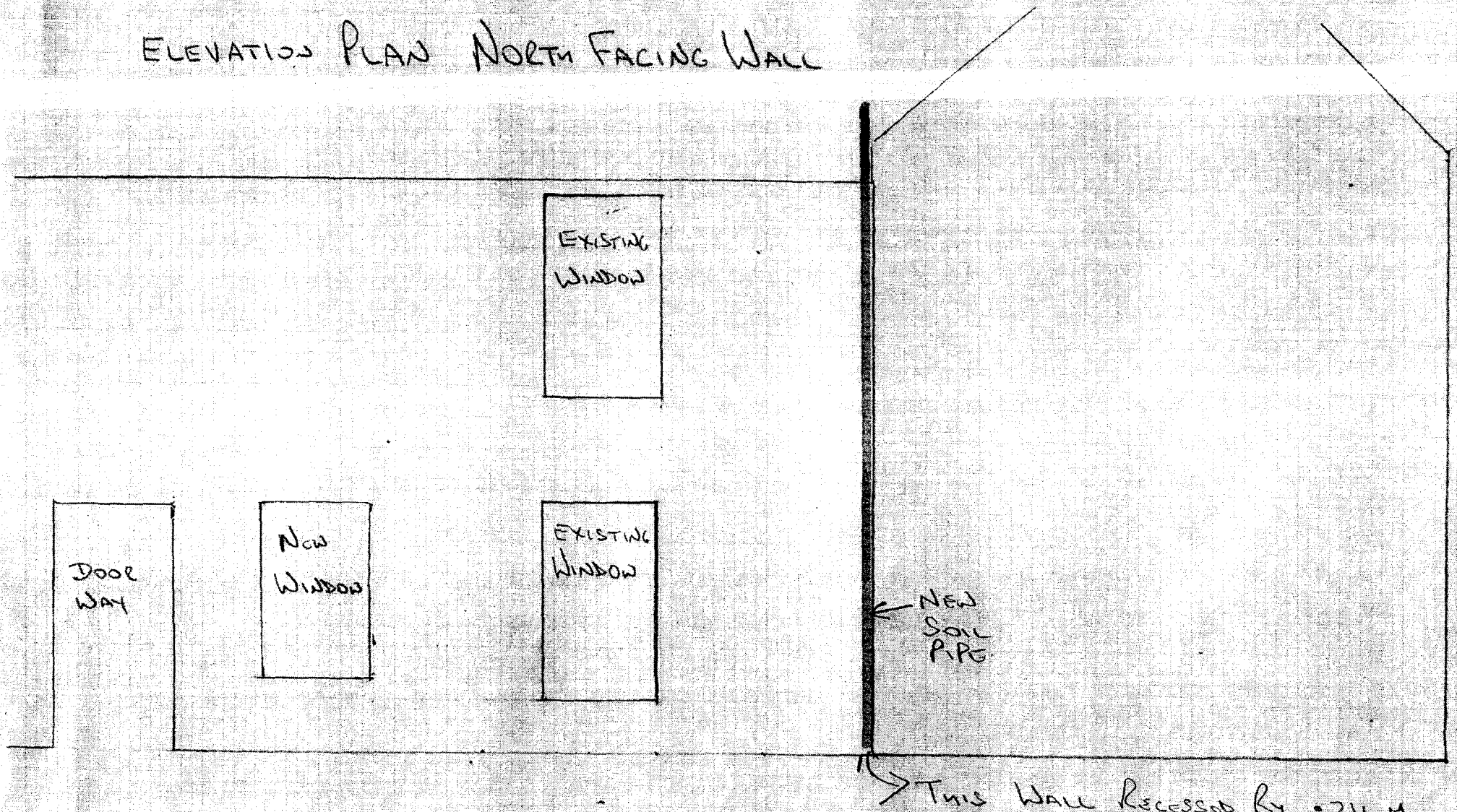
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SASH WINDOW RENOVATION SPECIALISTS

Elevation Plan Showing Coal Bunker Opening

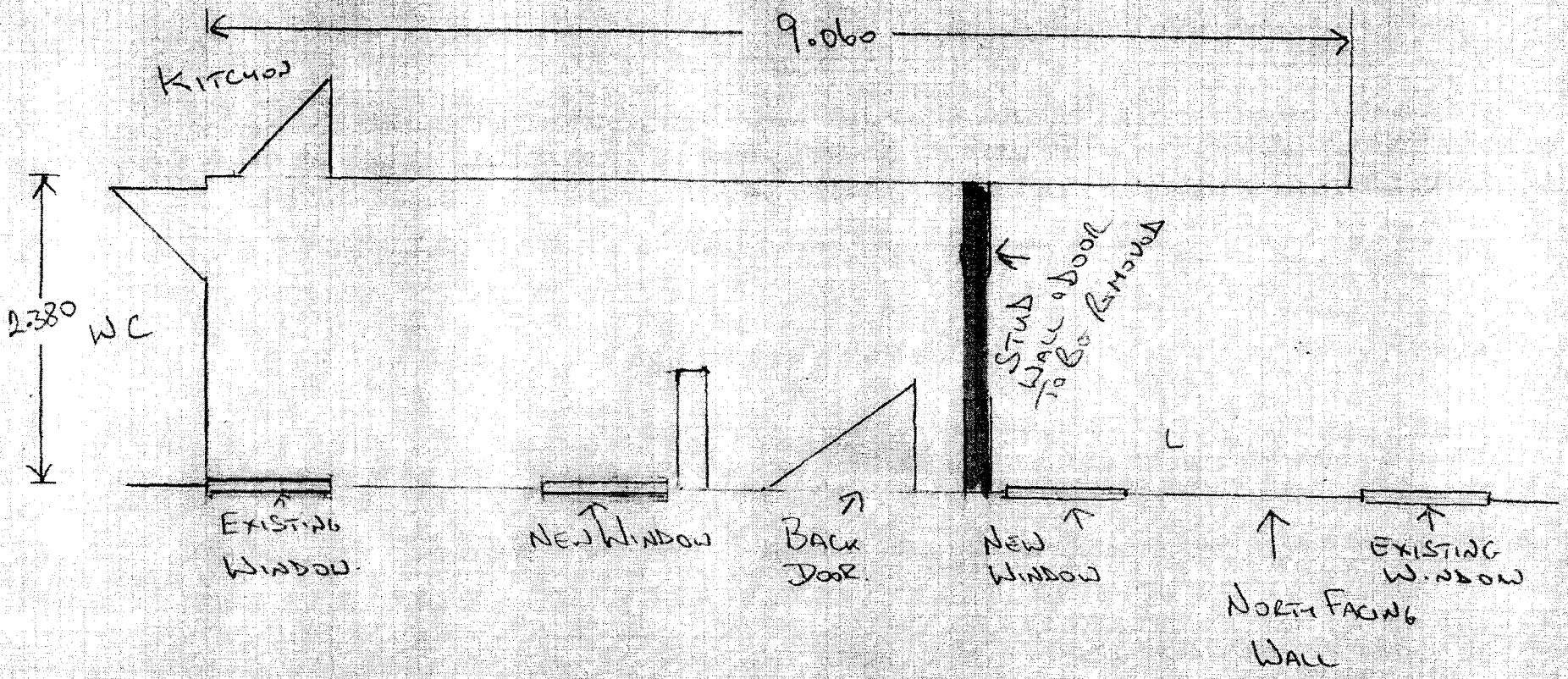


Opening To Be Bricked Up In Similar Brick Recessed 25mm To Show Old Opening
Lime Mortar To Be Used.

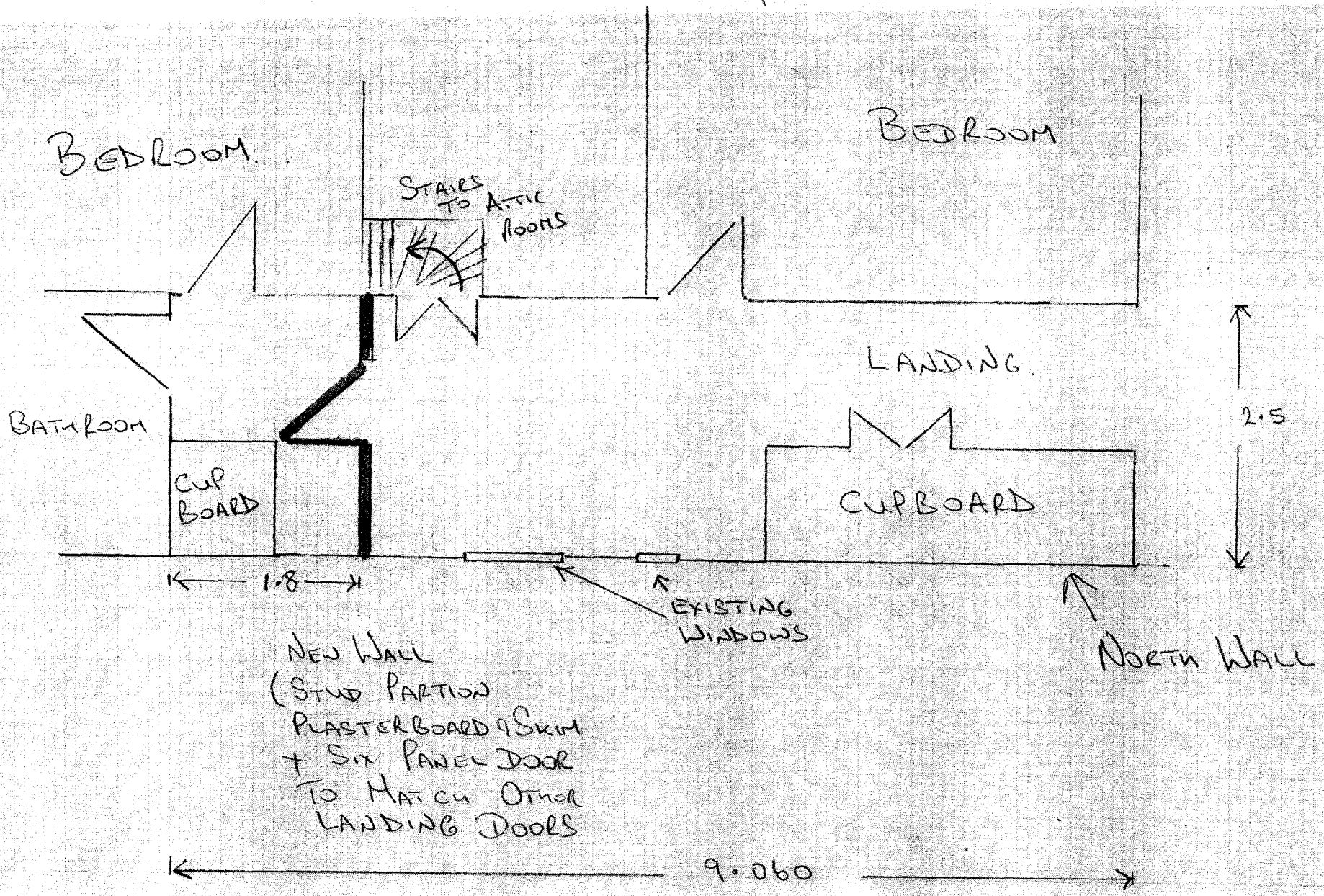
ELEVATION PLAN NORTH FACING WALL



Plan of Hall Showing Stud Wall & Door To Be Removed



PLAN of NEW PARTITION ON LANDING



TECHNICAL SPECIFICATION

4.2 The lining material consists of 'CICOmix' aggregate, ordinary Portland cement, water and a plasticiser approved for the purpose by the BBA. The constituent materials are mixed on site as required and pumped into position.

DESIGN DATA

6.4 Chimneys to be lined with the system must have a minimum wall thickness of 100 mm of masonry and may contain one flue or a number of flues separated by masonry mid-feathers. A thickness similar to that of the chimney wall must be maintained between the flueways in multiple flue chimneys.

6.5 The minimum permissible thickness of lining material is 19 mm. The dimensions of the existing chimney must be checked to ensure that it can accommodate the required flue diameter while maintaining at least the minimum wall thickness.

6.6 Where staining of internal finishes has occurred due to tar penetration of the brickwork, the advice of the Approved Installer must be sought as to the appropriate action to be taken when reinstating/repairing plasterwork, etc. In some cases staining will increase initially after lining due to the passage of moisture from the lightweight material during curing (see section 16.19).

6.7 To maintain the weathertightness of the chimney structure it is essential that details, such as chimney capping/ flaunching, flashings, external pointing of brickwork, rendering, etc be checked and maintained in accordance with normal good practice.

THERMAL PERFORMANCE

10.1 Calculations show that the use of the CICO Chimney Lining System will increase the thermal insulation value of conventional masonry chimneys. This will reduce the incidence of flue gas condensation and increase the chimney draught.

10.2 The additional insulation provided by the lining material will reduce the risk of overheating of adjacent structural timber providing the necessary spacing between the chimney masonry and the timber is maintained.

MAINTENANCE

11.2 It is recommended in the British Standard that chimneys are swept at least once a year, preferably at the start of the heating season, to ensure that the flue is not obstructed. Where solid fuel appliances or open fires are used continuously, particularly where bituminous fuel is burned, *more frequent sweeping may be necessary to prevent sooting-*up and obstruction of the flue. Where, as recommended in section 8.3 for the lining of existing chimneys, a flue diameter of 185 mm is used, the importance of adequate sweeping is increased because the rate of soot deposition in the flue may be increased.

11.3 While observing the general recommendations given in BS 6461: Part 1: 1984 the required frequency of sweeping for a particular installation is dependent on a number of factors, including the important ones referred to in section 11.2, and must be judged on the basis of experience. Inspection of the flue during the first heating season to provide such experience is recommended following the lining of the flue and when using new fuels. A tendency for the chimney to deflect smoke back into the room containing the appliance or open fire may indicate the need for sweeping.

DURABILITY

The material used in the CICO Chimney Lining System is durable in terms of its resistance to the flue conditions occurring in domestic chimneys. Provided that the chimney remains structurally stable and is correctly used, eg the flue size is matched to the type and rating of the heating appliance (see section 8 table 1), the flue is swept regularly (see section 11) and the appliance is maintained in good working order and not misused, the lining will have a minimum life of 60 years.

REINSTATEMENT OF PLASTERWORK AND REDECORATION

16.19 The installation of the CICO chimney lining system involves the introduction of a considerable amount of water into the chimney. In chimneys where the surrounding masonry is dry this water will be absorbed quite rapidly and will not give rise to any problems. In these circumstances conventional replastering and redecoration can be undertaken. However, in some cases, particularly where the masonry is already contaminated by flue gas condensate and soluble acid salts the drying out process can be much slower. During this drying period there may be increased evidence of tar staining on chimney walls sometimes accompanied by a characteristic 'sooty' odour. Where this problem becomes evident replastering and redecoration should be delayed for as long as possible to allow drying out. The advice of the Approved Installer should be sought regarding a suitable replastering specification. Where chimney masonry has a long history of severe tar staining it may be advisable to dry line the affected walls ensuring that batten fixings are corrosion resistant, for example stainless steel fixings could be used.

TECHNICAL INVESTIGATIONS

The following is a summary of the technical investigations carried out on the CICO Chimney Lining System.

17.1 Tests were carried out to determine:
effect of thermal shock
adequacy of thermal insulation
effect of sweeping
leakage rate before and after thermal tests
resistance to attack by acid condensation
practicability of installation.

17.2 An examination was made of existing data to determine:
adequacy of installation specification
adequacy of inspection procedures for existing masonry chimneys
durability of lining material.



CICO have branches throughout the country, each operating fully trained installation teams.

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Your local CICO branch

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CICO

1982 CICO CHIMNEY LININGS LTD 20 ANNIVERSARY 2002 SAXMUNDHAM

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Chimney lining by the CICO cast in-situ system

DETERMINED PLAN

CICO Chimney Linings which was founded in 1981 is now the largest chimney lining organisation using the cast in-situ system. It has branches throughout the UK and has its own British Board of Agrément approval for both the system and its installation — see Agrément Board list for details of approved branches. The system is suitable for all fuels and for all types of chimney, domestic , commercial and industrial.

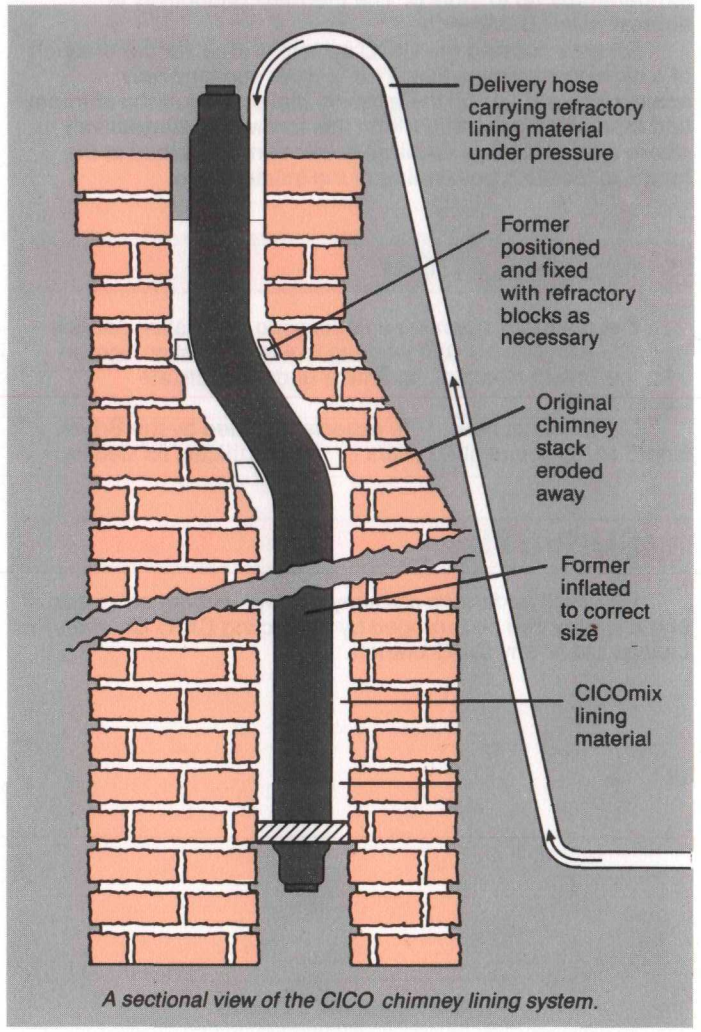
The CICO cast in-situ system is for lining and insulating new and existing chimney flues of all shapes and sizes with a jointless layer of refractory mortar.

Its advantages are–

- the provision of a well insulated, smooth-walled flue with minimal condensation problems and with no obstructions on which soot can collect or which can obstruct the escape of gases.
- the strengthening of stacks and the curing of problems associated with failed pargetting. Any cracks are sealed, thus preventing the seepage of dangerous fumes.
- the reduction of damp seepage on chimney breasts caused by coal tar or salts condensing on the inside of the flue. The CICO lining has thermal insulation properties.
- the elimination of jointing problems associated with precast linings, including clay liners. Neither is there any metal to corrode as is the case with steel liners.
- an improvement in updraught and a reduction in downdraught.
- economy in fuel consumption, as the flue can be formed in a size to suit the fire or heating appliance.
- convenience to householders because most of the work is carried out from the outside of the property.



A CICO engineer inserts the inflatable rubber former round which the CICOmix will be pumped to create the lining.



A sectional view of the CICO chimney lining system.

APPLICATIONS

Although designed primarily for masonry-built domestic chimneys, the system may also be used on most industrial, hospital, school and crematorium flues constructed of brick, stone or concrete block. The nature of the process is such that flues of all shapes and sizes can be treated; standard lining sizes are from 6″ to 26″, but larger diameters can be installed by special arrangement.

DESCRIPTION

The CICO system involves the use of an inflatable toughened rubber tube which is fed down the flue from the top of the stack. Where a bend in the flue occurs, a small entry into the flue is made so that the tube can be positively positioned in the centre of the flue to ensure an adequate thickness of lining at all points. When the tube reaches the fireplace or heating appliance, the bottom of the flue is sealed off with temporary shuttering.

The tube is then inflated to the diameter of flue required by the size of fireplace or heating appliance. CICOmix, a special insulating mix containing refractory aggregate, is then pumped into the chimney from the top of the stack. The mix is pumped under pressure from a portable mixing and pumping unit, and the design of the mix ensures that all cracks and cavities in the chimney are filled.

The lining compound achieves initial set in approximately 12 hours, and thereafter the former is deflated and removed, leaving a smooth-bored flue.

The lining has a density of approximately 900 kg per cubic metre and has been independently tested to withstand temperatures up to 1100°C. The thermal conductivity is approximately 0.2W/m°C.

For new housing the CICO system is ideal for the creation of a high performance flue. This is most economically achieved by shuttering the external dimensions of the chimney and then casting the flue within this formwork. Alternatively where a brick stack is required bricks can be omitted at the bends to facilitate positioning of the inflated tube.

INSTALLATION

The company operates a nationwide installation service using its own trained staff working to a specification agreed with the British Board of Agrément under Certificate No. 88/2098.

CICO linings have a life expectancy rated by the British Board of Agrément at 60 years — see Certificate for details.

SURVEYS

CICO will undertake chimney surveys without obligation and a survey can be arranged by contacting CICO Chimney Linings Ltd or any CICO branch.

CICO Patent No. 2212605



The inflated former is measured to ensure that it is the correct size for the flue required.



At bends in the chimney the former is carefully centralised using pre-cast spacers or coil springs.

The sizing of flues

The following is an extract from the British Board of Agrément Certificate No. 88/2098 'The CICO Chimney Lining System' —

8.2 The minimum sizes of flues in new chimneys recommended for open fires and appliances in non-industrial situations are indicated in Table 1. Where a new chimney is to be constructed and lined using the CICO system it must be of a suitable size to allow the accommodation of the required flue diameter while maintaining the minimum lining thickness of 19 mm.

8.3 The recommendations in Table 1 apply also to existing chimneys, except that in the case of chimneys serving an open fire, a reduced diameter of 185 mm is acceptable, subject to an important requirement for increased sweeping. This reduction allows a minimum 19 mm flue lining to be maintained in an existing conventional 225 mm by 225 mm flue.

8.4 British Gas will permit the connection of domestic gas appliances to chimneys lined using the CICO System providing the client can show a copy of the form signed by the lining installer to demonstrate that the lining has been carried out in accordance with this Certificate.

Table 1 Recommended flue sizes for various types of domestic appliances

Type of fuel	Type of appliance	Rated output (kW)	Flue sizes (mm)	Remarks
Solid	Open fire–existing	—	185*	Smokeless fuel or coal
	Open fire–new	—	200*	Smokeless fuel or coal
Solid	Roomheater	0–15	150** 175**	Smokeless fuel Coal
		15–30	175**	Smokeless fuel or coal
Solid	Independent boiler	0–20	150** 175**	Smokeless fuel Coal
		20–30	175** 200**	Smokeless fuel Coal
		30–45	200**	Smokeless fuel or coal
Oil	Closed room heater Central heating boiler Warm air convector Water heater	0–45	150**	The flue size will be specified by the appliance manufacturer
Gas	Fire Central heating boiler Warm air convector Water heater	0–45	130** 150**	The flue size will be specified by the appliance manufacturer

*See section 8.3 regarding flues in existing chimneys.
**These are minimum sizes. The actual size must not be smaller than the outlet diameter of the appliance.

In addition Building Regulations make specific recommendations regarding flue sizes and methods of flue lining, but they also state that any system covered by an Agrément Certificate or a British Standard is acceptable. This results in the following recommendations for flue sizes–

Solid fuel open fires (see BS6461/Part 2/1984)

Agrément Certificate (for cast in-situ system) — minimum 185 mm dia (for existing properties)

Building Regulations — minimum 200 mm dia (normally regarded as applicable to new construction)

Solid fuel appliances (see BS6461/Part 2/1984)

Up to 30 KW — minimum 150 mm dia subject to being not less than the diameter of the outlet on the appliance

30 KW to 45 KW — minimum 175 mm dia subject to being not less than the diameter of the outlet on the appliance

Gas burning appliances (see BS6714/1986)

Decorative open fires — minimum 175 mm dia; construction suitable for solid fuel

Gas radiant fires — flue cross-sectional area, minimum 12,000 mm^2

Note:

(a) a flexible metallic liner to BS715/1970 may be used providing the chimney was built before 1st February 1966 or is already lined to suit the burning of solid fuel

(b) any access for cleaning should be fitted with a non-combustible gas type cover or draught stabiliser

(c) outlets should be situated at least 600 mm from an opening in the building and fitted with a terminal of which any dimension across the axis is less than 200 mm

Closed appliances — at least equal to the size of the outlet (if rectangular, the larger dimension should not be more than 5 times the smaller)

Oil burning appliances

Up to 20 KW — minimum 125 mm dia

20 KW to 30 KW — minimum 150 mm dia

30 KW to 45 KW — minimum 175 mm dia

Note:

With oil burning appliances, if the temperature of the flue gases exceeds 260°C then the construction must be equivalent to that for solid fuel

BBA BRITISH BOARD OF AGRÉMENT
CERTIFICATE No. 88/2098

CICO Chimney Linings Ltd holds British Board of Agrément Certificate No. 88/2098 'The CICO Chimney Lining System' which covers coal, gas and oil fuels, and a list of approved branches is available from the Agrément Board or CICO Chimney Linings Ltd.

The following are some relevant extracts from the Certificate and are the result of the Agrément Board's independent assessment and testing —

1 The Building Regulations 1985 (England and Wales)

The Secretary of State has agreed with the British Board of Agrément the requirements of the Building Regulations to which the chimney lining systems can contribute in achieving compliance of new chimneys. In the opinion of the BBA, the CICO Chimney Lining System, if used in accordance with the provisions of this Certificate in existing chimneys, will contribute to meeting the relevant requirements.

Requirement		Comments
J2	Discharge of products of combustion	The product improves: (a) the thermal insulation of a masonry chimney, (b) the resistance to flue gas leakage. See sections 6 and 10 of this Certificate.
J3	Protection of building	The product improves the thermal insulation of the chimney and provides a continuous, non-combustible lining. See sections 6 and 9 of this Certificate.
Regulation 7	Materials and workmanship	The CICO Chimney Lining System is acceptable.

Linings installed in existing chimneys are not subject to the requirements of The Building Regulations 1985.

2 The Building Standards (Scotland) Regulations 1981 to 1987

In the opinion of the BBA, the CICO Chimney Lining System, when used in new and existing chimneys and in accordance with the provisions of this Certificate will satisfy the various Regulations as listed below.

Regulation		Comments
B2	Selection and use of materials	The CICO Chimney Lining System is acceptable. See section 12 of this Certificate.
C2	Foundation and structure above foundation	The CICO Chimney Lining System can satisfy this Regulation provided the installation is carried out in accordance with the provisions of this Certificate. See sections 9 and 13 of this Certificate.
Part F	Chimneys, flues, hearths and the installation of heat-producing appliances	The CICO Chimney Lining System can satisfy the relevant requirements of this Part except for Regulations F10 and F24 which require specific types of linings. In the opinion of the BBA it would be reasonable to seek relaxation of these regulations where chimneys are lined in accordance with this Certificate. See sections 8.2, 8.3 and 8.4 for chimney sizes in regard to compliance with Regulation F12(2).

The Old Vicarage

Listed Building Planning Consent

February 2002

DETE
Plann
Ref 03858/03

List of Proposed Restoration Works

Job Description	Details	Attachments
Exterior of Property		
New Roof	New Timbers/ Wall Plate etc as required New Roof covering in "Spanish Slate (To reduce weight Load to roof to stabilise building) New Ties etc as per Structural surveyors Report New Lead to be introduced to all valleys and gutters	**Structural Surveyor report** [redacted]
Chimneys	All Chimneys to be made waterproof and safe – rebuilt or re-pointed as required	
North Wall Gutter	New Gutter in Cast or Aluminium Identical to old unserviceable gutter	
Windows	All Existing windows to be refurbished/replaced as required – all new windows/window parts to be constructed in matching timber and window bars to be "Lambs Tongue" design as per original – where possible any original glass etc to be kept and used. **Contractor to agree specification etc with conservation officer as woodwork is exposed** New Windows to be inserted in bricked up windows in North Ground Floor The construction of these to be same construction as the original windows in property – i.e sliding sash single glaze with lambs tongue window bars. "Modern windows" on North facing wall to be replaced with new windows constructed as per original house windows.	
Doors	2 New Door to be constructed Design Identical to existing North Facing Door (Rear Hall Entrance)for the north facing door (Rear Hall Entrance) and the East Facing Door (Utility Room Entrance)	
Coal Bunker Opening	This to be bricked up and "False Doors" (Identical to current ones) to hide new brickwork.	
Damp Proof Course	Impregnated DPC to be injected in problem areas at north rear walls (Subject to advice of surveyor	
Bowed walls to South facing Wall	Ties to be incorporated to restrict any further movement	**See Structural Surveyors Report**
New Drains	New Drains to be constructed and introduced from north side around east side and link into	

SIDEBOTTOM
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Fax : 01775 712635
E-Mail : src@s-r-c.co.uk

PRELIMINARY STRUCTURAL REPORT

UPON

ROOF STRUCTURE

AT

PINCHBECK VICARAGE

SPALDING

LINCS

DETERMINED
PLAN

Rec 03 88 03

Mr I. Williams
Maple House
Church Lane
Wyberton
Boston
PE21 7AF

PRELIMINARY STRUCTURAL REPORT

UPON

ROOF STRUCTURE

AT

PINCHBECK VICARAGE

SPALDING

LINCS

REFERENCE: 15103 **MARCH 2003**

INTRODUCTION

At the request of Mr I. Williams, we confirm having visited the property on the 7th March 2003, the purpose being to inspect the roof structure only and make a visual inspection of the structural elements.

Our comments are restricted to the timber roof framing only and not a full survey of the whole property, since this is beyond the scope of our present instructions.

The purpose of this report is to comment upon the present condition of the roof structure and make comments and recommendations upon basic repairs and long term performance of the timber roof framing.

At this stage we do not intend to prepare detailed calculations and details relating to specific requirements.

"COMMENTS AS SEEN"

This substantial property dates back some considerable time and has had various extensions and alterations over the years, some of which have affected the roof structure.

The floor level to the rear East room within the roof space has been lowered. This has allowed the roof to spread outwards, due to the tie having been removed at eaves level.

External brickwork is distorted above the front window and bows outwards, see photograph 1.

Internally a diagonal steel tie has been inserted within the room, in an attempt to arrest further movement, and a timber prop supports the roof below the window, see photograph 2.

The ceiling was removed along the front eaves line to reveal very wet and decayed timbers, see photograph 3, with dampness clearly apparent upon internal brickwork.

The dampness extends along the wall into the landing area which also has a lowered floor.

Steel straps are in place at eaves level around the substantial timbers that form the doorway, see photograph 4.

Within the roof space above the front West area of the house, remedial strengthening in the form of additional purlins and stud partitions have been added, see photograph 5.

These purlins extend along the full length of the front elevation and are supported by the central chimney stack.

Plasterboard is in place to the slope along the front elevation. To the inner roof slope the original lathe and reed ceilings remain.

Large areas of dampness are present within these areas where extensive damage and water ingress is visible, see photographs 6 & 7.

CONCLUSIONS

The roof structure has benefited from having been re-roofed in the past, since bituminous felt is present above original rafters.

With the exception of the East end of the house, where the floor has been lowered, the roof structure is typical of a house of this type and has adequately supported roof loads during its life time.

However, perhaps due to changed to the external brickwork by forming a parapet at eaves level, the water proof membrane has now failed.

This has caused decay in the form of wet rot to take place and the need for replacement timbers to be inserted.

It is therefore necessary to implement a complete overhaul of the roof covering and supports.

RECOMMENDATIONS

The whole of the roof covering should be removed and replaced with the same slates incorporating new felt and flashings throughout.

Careful consideration should be given to flashing details at eaves level and at the back of the parapet.

The original roof timbers should remain wherever possible, however, with the roof covering removed, all timbers can be inspected and removed if wet or decayed.

It will be necessary to treat all timbers against future insect and fungal attack.

Original timbers if decayed, should be removed 1.0m beyond signs of dampness etc and replaced with new sound timber adequately spliced or bolted to the existing member.

It will be necessary to introduce additional strengthening to the front West roof area.

New adequately sized timber purlins are required to both roof slopes, supported off the chimney stack and a new intermediate stud wall.

The stud wall should be supported by a steel beam within the floor space, which can also provide enhanced support to the floor joists.

Where the floor has been lowered to the rear of the house, substantial strengthening is required to arrest the outward spread at eaves level.

It is recommended that brickwork is removed in this region, above the first floor windows.

The wall can be rebuilt using reclaimed bricks and incorporating a stud partition to support the roof.

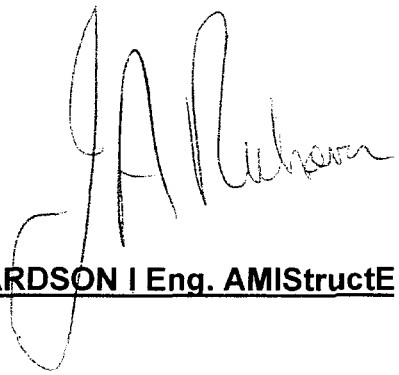
It will be necessary to provide new floor joists throughout this rear room, which are required to support roof loading.

SUMMARY

We feel the roof structure is now in a condition that necessitates extensive remedial action to take place so that the whole fabric of the house can be preserved.

Nevertheless, by appointing suitable contractors familiar with this type of work, we see no reason why the roof cannot be repaired.

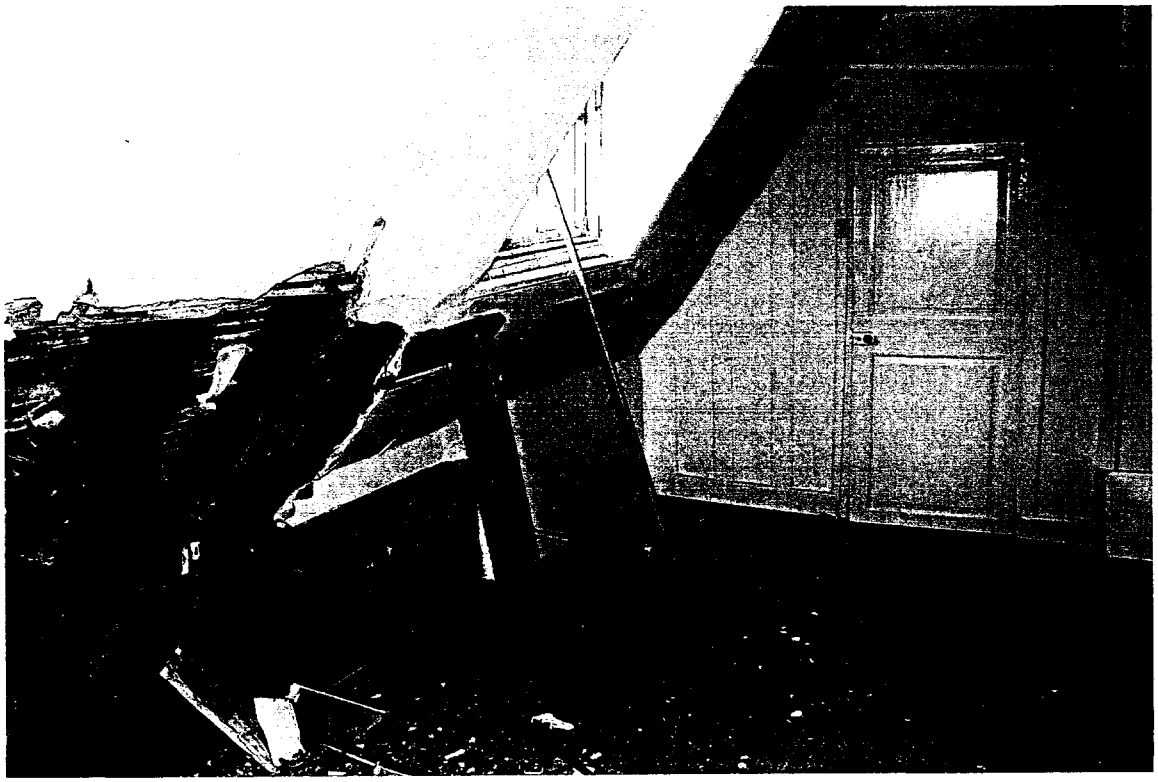
For and on behalf of **SIDEBOTTOM RICHARDSON CHENG LTD**



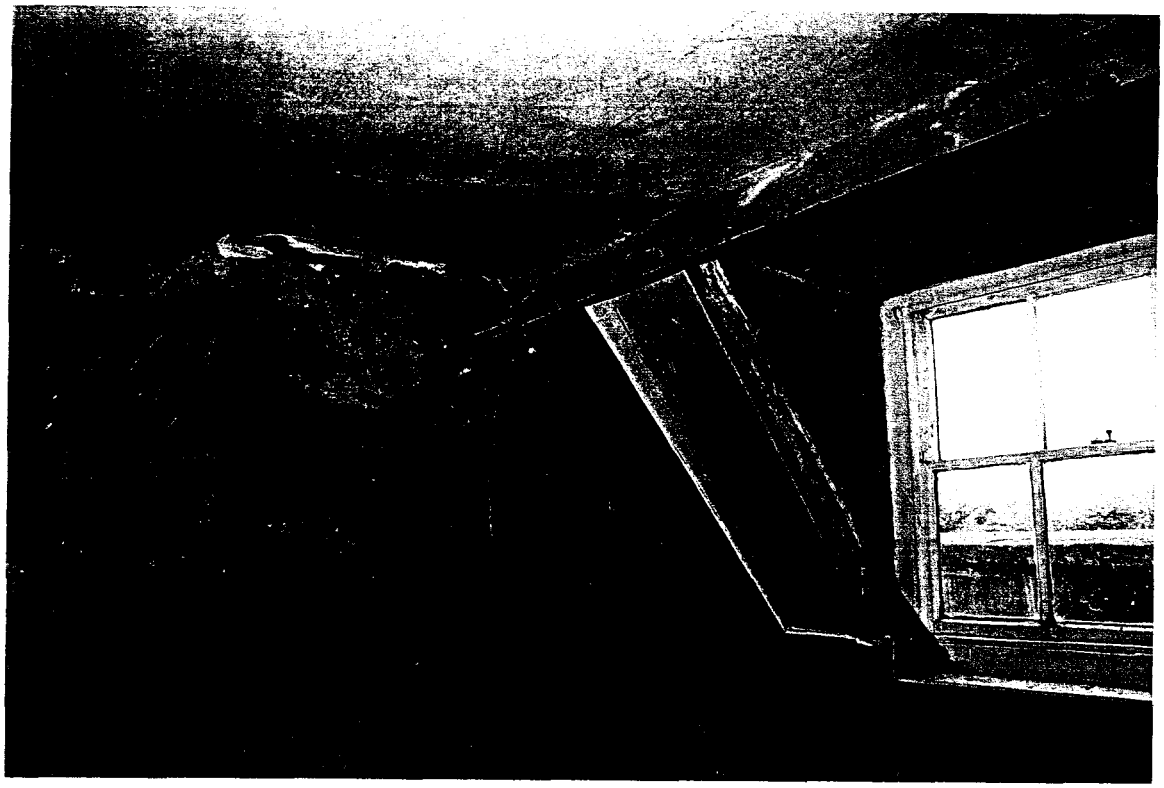
J.A. RICHARDSON I Eng. AMIStructE **19TH MARCH 2003**



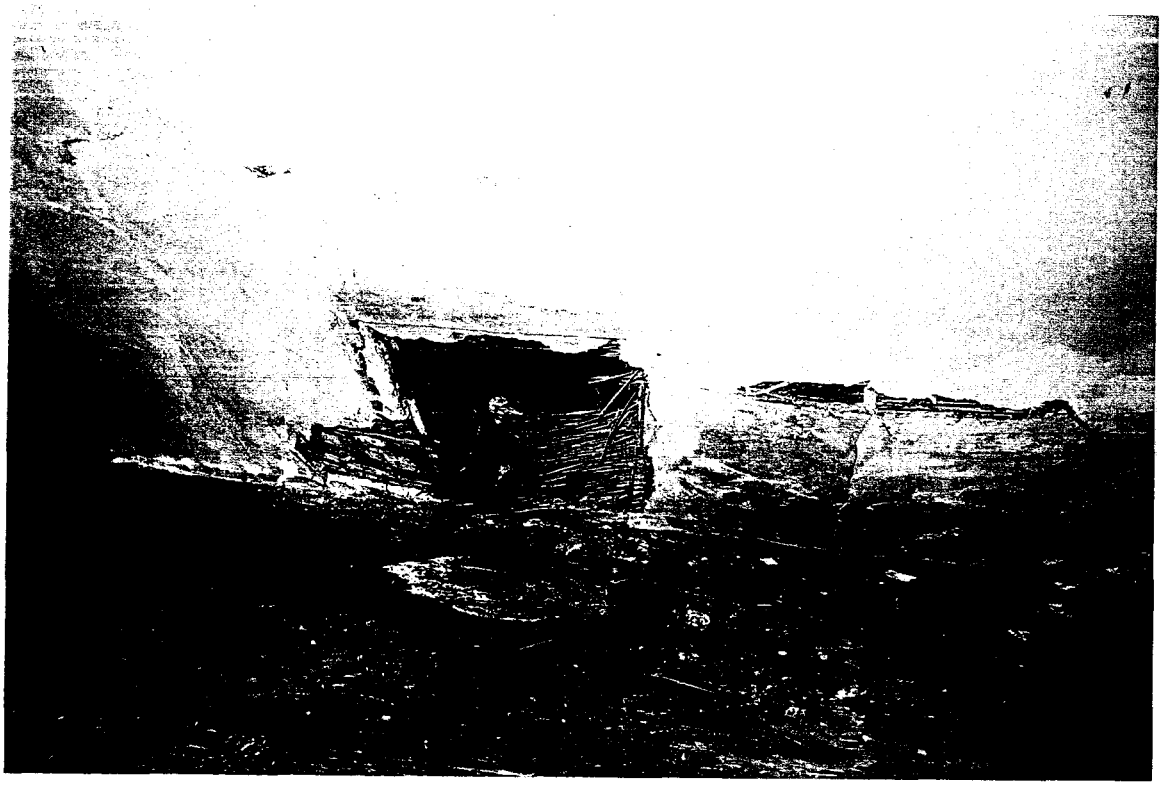
PHOTOGRAPH 1



PHOTOGRAPH 2



PHOTOGRAPH 5



PHOTOGRAPH 6



PHOTOGRAPH 7

	existing drain at south east corner of property	
New Soil Pipe	New soil Pipe to service 2 new bathrooms on north wall (Pipe to be placed in recess and "out of sight"	
Water Mains	New PVC Pipe to enter at utility room to replace existing galvanised	
Ground Floor Rooms		
		Old Coal Bunker(to be used as Wine Store)
Dry Rot	All timbers to be removed and destroyed walls to be treated with suitable fungicide to stop future infestations	
DPC	Impregnated DPC to be injected as required	
Opening	To be Bricked up (see outside works)	
Ceiling	New Ceiling to be installed	
Door	New Six Panel Internal Door to match doors in rest of property	
		Utility Room
Plumbing	To incorporate new Central Heating Boiler – balanced flue to Eastern wall Hot water storage Tank Plumbing for Washing Machine Tumble Drier new sink and storage cupboards with work top	
Floor	New tiled Surface floor	
		Pantry
DPC	Impregnated DPC to be injected	
Concrete Slab	To be removed	
Shelving	To be renovated	
		Kitchen
Chimney	Old Opening to be reopened	
Fittings	Existing Units to be Replaced with new units	
Doors	All doors to be replaced to match doors in rest of property – i.e. 6 panel doors	
		Dining Room
New Fire Place		
New Ceiling Rose		
		Cloak Room
Door	New Six Panel Internal Door to match doors in rest of property	
DPC	Impregnated DPC to be injected	
Skirting	New Skirting (appropriate to property) to replace rotten skirting	
Sanitary Ware	New Low Level Suite	
		Hall
Dividing wall	To be Removed to make hall "as was"	
DPC	Impregnated DPC to be injected as required	
Skirting	Rotten timbers to be Replaced	
		Porch to South Wall
Porch	To be dismantled/ rebuilt and missing coloured glass to be replaced	

		Study
Fire Place	Inject DPC	
Shelving in Alcoves	To be removed	
		Lounge
Fireplace	New Fireplace	
Ceiling	New Ceiling Rose	
	First Floor Rooms	
		Landing
New Partition	New partition at east end of north landing	
Ceiling	Repair damaged Ceiling	
Skirting	New Skirting to areas without Skirting	
		First Bedroom (Large Room on West Wing)
New Ceiling	To replace water damaged ceiling	
		Second Bedroom (Smaller Room on West Wing)
Change to New Bathroom	Waste Pipes into new Down Pipe mentioned Earlier	
		Main Bathroom
New Suite	Keep Existing Bath & Basin (if salvageable) Install new high Level flush WC & Shower Cubicle.	
	Second Floor Rooms	
		Small Bedroom on west wing
Convert to en suite Bathroom	Waste Pipes into new Down Pipe mentioned Earlier	

Miscellaneous

- New Gas Central heating to be installed throughout property existing system to be removed.
- Additional power sockets, telephone points and TV ariel points to be fitted as required – all wiring to be discreet and run in floor voids and sunk in walls
- All wooden timbers to be treated for wood worm etc
- Property to be redecorated through out

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The Workshop Slippery Gowt Lane Wyberton Boston Lincs PE21 7AA
Telephone: 01205 354629 Fax: 01205 358214
Email:info@ tclarkejoinery.co.uk
Website: www.tclarkejoinery.co.uk

Specialists in Joinery Manufacturing

DETERMINED
PLAN

22nd April 2003

Mr. J Williamson
Maple House
Church Lane
Wyberton
Boston
PE21 7AF

Dear Mr. Willamson,

Re: Pinchbeck Vicarage

Works to be carried out to existing windows.

Reuse existing ironmongery & sash weights as condition permits.

To remove all windows to the north, south. East & west elevations. Hoard openings using MDF or sterling board to internal & external wall faces.

North wall, Ground floor

Remove existing glass & renew Top sash box & parting bead.

West wall

Renew box frames, cills & architrave's. Reuse existing sashes.

South wall left to right 1 – 5 Window 1 & 2.

Renew complete wrong mouldings and box frames rotten. Window 3 renew 2 sashes, architrave, box & parting beads. Windows 4 & 5 renew complete.

First Floor West & South Elevation

Renew windows using 6 existing sashes and glass.

East elevation 1st & 2nd Floor

Renew to original pattern as discussed at site meeting.

All the mouldings to match the original patterns, reuse all glass. Ensure all shutters sliding & hinged to operate as original.

Utile

Addendum

To manufacture replacement external door & frame as per existing, which is in a state of dereliction beyond repair.

Yours faithfully,

Tony Clarke
Joinery Manufacturer

M. W. HARDY

Roofing and Building Contractor

48 ALBERT STREET, SPALDING, LINCOLNSHIRE PE11 2LD
Telephone 01775 766341
Fax 01775 725065
VAT Reg. No. 486 2569 04

MWH/ENQ108J

23 April 2003

MR IAN WILLIAMS
Church Lane
Wyberton
BOSTON
Lincs.
PE21 7AF

Dear Mr Williams

RE: THE OLD VICARAGE,PINCHBECK,SPALDING,LINCS.

Further to our telephone conversation of today we would confirm the roof loading in respect of the proposed Spanish Slate and the existing Welsh Tonne Random Slate.

The followig weights account for the slates only and do not include for lath/sarking felt etc.

500mmx250mm Natural Spanish Slate weight per square metre = 31 Kg

Random layed Welsh Tonne weight per square metre = 67Kg-93Kg

The varied weight range of the Welsh Tonne slate is due to them being laid in diminishing courses, heavier large slates at bottom (eaves), lighter small slates at top (ridge), the average weight mid rafter would be approximately 80Kg per metre square.

We trust the foregoing provides you with all the necessary details but should you need any further information please do not hesitate to contact us.

Yours Faithfully

M.W.Hardy

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DETERMINED
PLAN

Your Ref. Our Ref. 15103/JAR/SG Date. 22nd April 2003

Mr I. Williams
Maple House
Church Lane
Wyberton
Boston
Lincs
PE21 7AF

Dear Mr Williams

Re: **REMEDIAL WORK TO ROOF AT PINCHBECK VICARAGE, PINCHBECK, SPALDING**

Further to our recent discussions, we write to confirm our comment relating to the new roof covering.

Clearly it will not be possible to re-use the actual slates on the roof since they are damaged. Our comment refers to the use of slates or similar of reduced weight, which would be beneficial, rather than heavier concrete tiles or pantiles.

We trust the foregoing clarifies this point.

Yours sincerely
For and on behalf of **SIDEBOTTOM RICHARDSON CHENG LTD**

J.A. RICHARDSON

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Project No.	1510 3	
Sheet No.	1.	Rev.
Date	3/4/03	
Designer	A.S.	

PROJECT:

REMEDIAL WORK TO EXISTING ROOFING

THE OLD DICKENSIAN — PINCHBECK

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Project No. 1510 3
Sheet No. 2 Rev.
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PROJECT:

LOADING

(ROOF)

Superimposed	= 2.75 Kn/m²	
Slates	= 0.58 Kn/m²	
T & G Battens + Sarking Felt	= 0.04 Kn/m²	
" " Rafters	= 0.26 Kn/m²	
Miscellaneous	= 0.05 Kn/m²	
	1.68 Kn/m²	

ED Lining = 0.20 Kn/m²

(1ST FLOOR)

Superimposed	= 1.50 Kn/m²	
Timber Decking	= 0.13 Kn/m²	
" Joists	= 0.10 Kn/m²	
Ceiling + Services	= 0.20 Kn/m²	
	1.93 Kn/m²	

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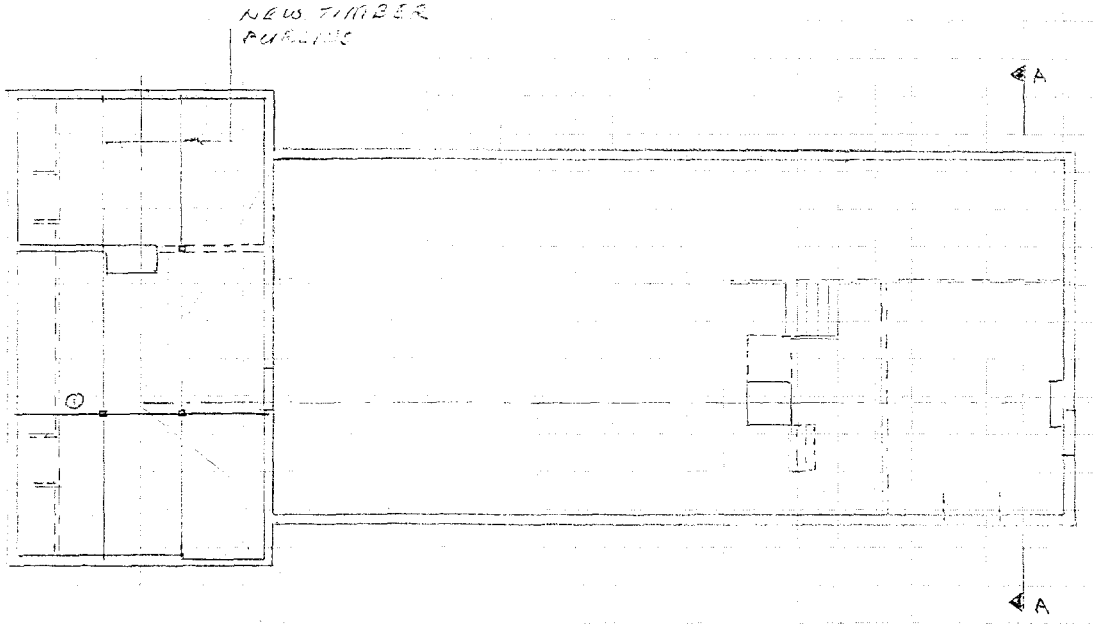
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1:150

PLAN

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PROJECT:

UC(N) PURLINS

$W_{PURLIN} = (1.20 + 0.20) \times 1.600 \times 2.200 \times 1.10 = 10.56\,kN$

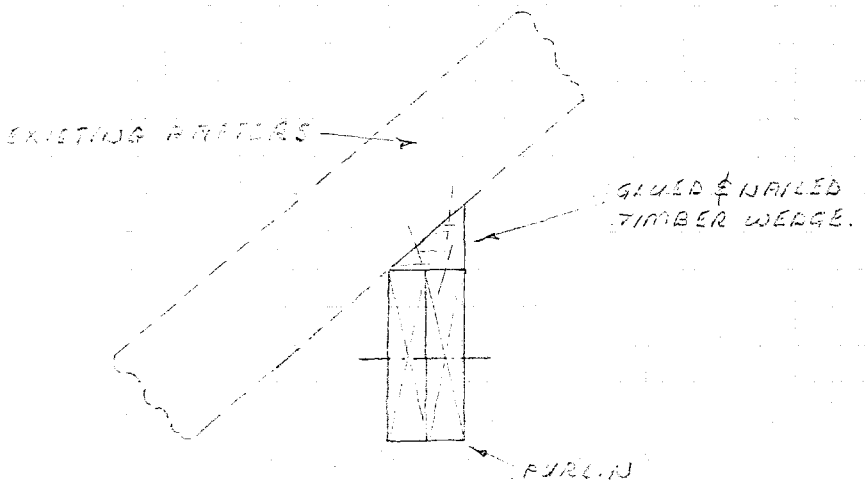
$M_{G+Q} = 0.125 \times 10.56 \times 3.200 = 4.23\,kNm$

$Z = \frac{4.23 \times 10^6}{5.3 \times 1.25} = 638.40 \times 10^3\,mm^3$

$\delta_{max} = 0.003 \times 2200 = 9.60\,mm$

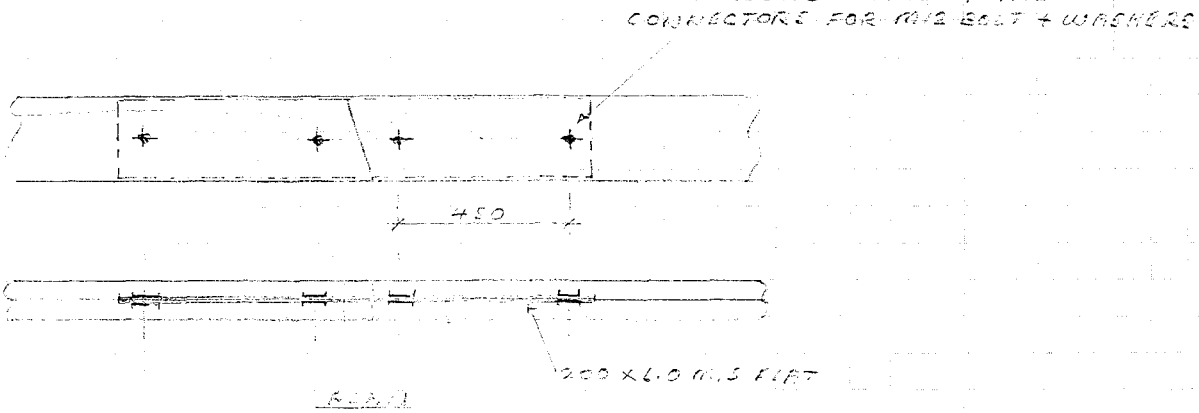
$I = \frac{5 \times 10.56 \times 10^3 \times 3200^3}{384 \times 5800 \times 9.60} = 8.97 \times 10^6\,mm^4$

USE 2/50 x 225 TIMBERS (GRADE SC3) BOLTED TOGETHER



SECTION

SPLICE (OPTIONAL).



PLAN

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Sheet No. 5 Rev.
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PROJECT:

TIMBER POSTS

F = 10.58 + 0.20 = 10.78 kN

$M_{y,Ed}$ = 10.78 × 0.050 = 0.54 kNm SAY

L = 3.285 m.

$f_{m,d} = \frac{0.54 \times 10^6}{167 \times 10^2} = 3.23$ N/mm² $\sigma_{c,d} = \frac{10.78 \times 10^3}{10.6 \times 10^3} = 1.00$ N/mm²

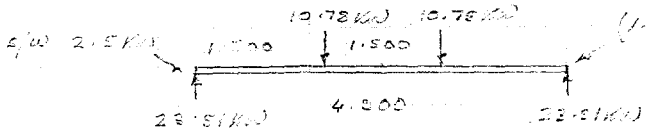
$\lambda_e = \frac{3.14^2 \times 5800}{(1285/28.6)^2} = 0.15$ $K_{1.2} = 0.852$

$\frac{3.23}{5.3 \times 0.852\left(1 - \frac{1.45 \times 1.00}{0.15} \times 0.852\right)} + \frac{1.00}{6.83 \times 0.852} = 0.82 < 1.125$ OK.

USE TIMBER SECTION 100 × 100 (GRADE SC3).

NOTE STRAP/TIE POST(S) TO & BOTTOM TO EXISTING.

BEAM ①



s/w 2.5kN/m

(1.33 + 1.0) × 1.600 × 4.800 = 22.97kN SAY.

$M_{Ed} = (23.51 \times 2.450) - (10.78 \times 0.750) - (10.78 \times 0.450) = 33.82$ kNm

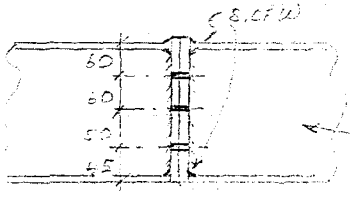
TRY 220 × 100 × 44 kg/m

$\lambda = \frac{4.800 \times 10^2}{5.11} = 93.93$ $\frac{\lambda}{\pi} = 22.3$ ∴ $p_{bc} = 136.4$ N/mm²

$f_{b,d} = \frac{33.82 \times 10^3}{449.2} = 75.31$ N/mm² OK

TRY 220 × 100 × 44 kg/m

SPLICE



$M_{BOLT} = 2(68.1/170)(48.5(120))^{10^3}$
= 34.9 kNm
OK

4 No M20 (Gr 5.8) BOLTS @ 70 c/c. THRO' 20mm THK END PLATES

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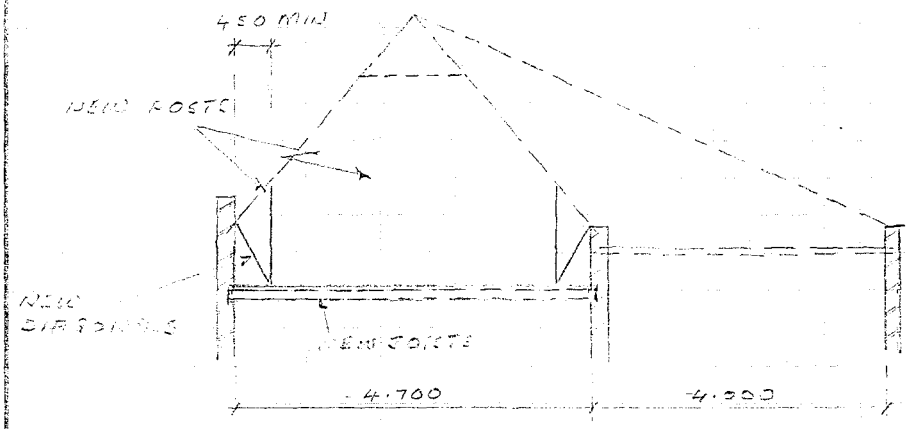
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PROJECT:

SITE AREA REMEDIAL



SECTION A-A

LOAD ANALYSIS LEAN-TO RAFTER

W.D.L = 1.68 x 5.450 x 6.350 = 4.60 KN

R.L & R.R = 2.40 KN

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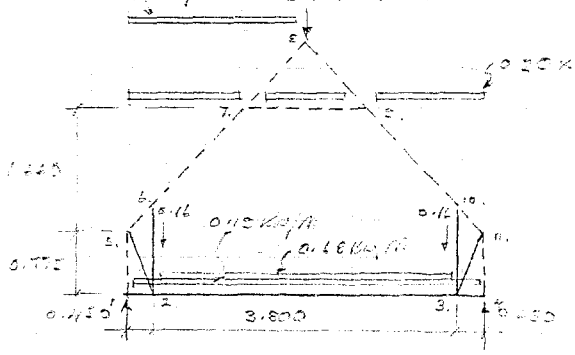
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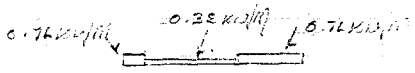
ROOF SUPPORT SYSTEM [INTERNAL WALLS]

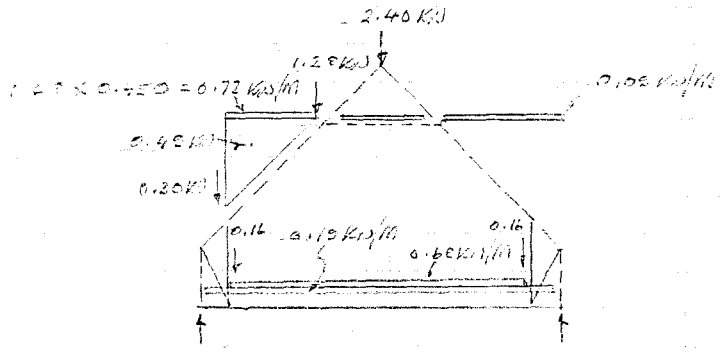
1.42 x 0.450 = 0.76 Kn/m (self) 2.40 KN (0.32)



ANALYSIS BY COMPUTER (SEE LATER)

ROOF SUPPORT SYSTEM (ADJACENT WORKER)

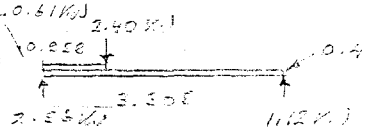




15108A

0.26 + 0.20 = 0.46 Kn/m²

1.42 x 0.450 x 0.555 = 0.61 KN 2.40 KN



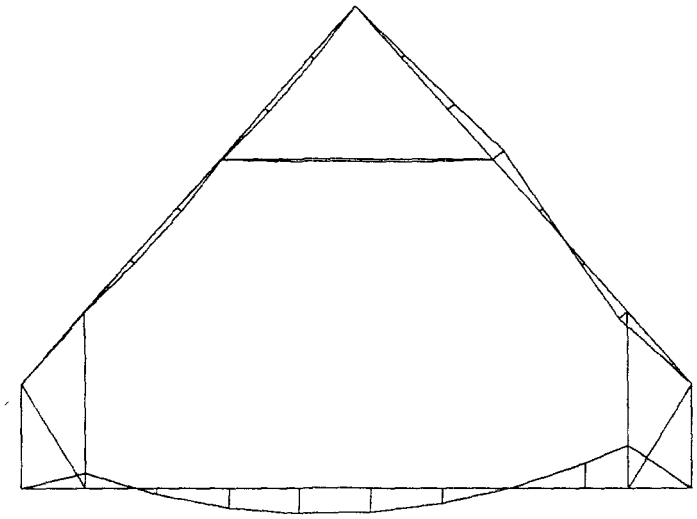
0.42 x 0.450 x 3.300 = 0.62 KN

ANALYSIS BY COMPUTER (SEE LATER)

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Loading Case 01 : DEAD+SUPERIMPOSED
Bending Moment Diagram (Major and Minor Axes) - (Full Frame) - Front View
5 kN.m = 1m

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Nodal Deflections (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Nodal Def. (mm and Degrees)				Node	Nodal Def. (mm and Degrees)			
	δ X →	δ Y ↑	ΦZ ↗	δ XY		δ X →	δ Y ↑	ΦZ ↗	δ XY
1	0.00	0.00	-0.06	0.00	2	0.00	-0.58	-0.09	0.58
3	0.08	-0.18	0.05	0.20	4	0.08	0.00	0.00	0.08
5	0.76	0.00	-0.08	0.76	6	1.38	-0.59	-0.05	1.50
7	1.37	-0.71	0.03	1.55	8	0.39	0.04	0.07	0.39
9	1.31	0.90	-0.03	1.59	10	-0.06	-0.14	-0.02	0.15
11	0.02	0.00	0.03	0.02					

Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
1	1	0.000C	-1.371	0.000		0.027
	2	0.000C	-1.456	-0.636		@ 0.261
2	1	6.206C	0.000	0.000		0.000
	5	6.206C	0.000	0.000		@ 0.504
3	5	3.400C	0.234	0.000	0.078	0.042
	6	3.107C	-0.011	0.078	@ 0.666	@ 0.386
4	6	3.329C	0.181	0.078	0.124	0.321
	7	2.715C	-0.334	-0.034	@ 0.513	@ 0.674
5	7	1.957C	0.257	-0.034	0.071	0.182
	8	1.399C	-0.211	0.000	@ 0.819	@ 0.774
6	8	1.804C	-0.129	0.000		0.381
	9	1.892C	-0.203	-0.248		@ 0.879
7	9	2.651C	0.388	-0.248		0.115
	10	2.803C	0.261	0.228		@ 1.128
8	10	3.472C	-0.294	0.228		0.088
	11	3.545C	-0.355	0.000		@ 0.302
9	4	6.395C	0.000	0.000		0.000
	11	6.395C	0.000	0.000		@ 0.248
10	2	2.002T	1.542	-0.636	0.730	2.781
	3	2.002T	-1.764	-1.059	@ 1.786	@ 1.824
11	3	0.000C	2.397	-1.059		0.046
	4	0.000C	2.312	0.000		@ 0.189
12	7	0.940C	0.201	0.000	0.096	1.474
	9	0.940C	-0.201	0.000	@ 0.958	@ 0.958
13	2	0.290C	0.000	0.000		0.000
	6	0.290C	0.000	0.000		@ 1.247
14	3	0.874T	0.000	0.000		0.000
	10	0.874T	0.000	0.000		@ 1.287

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Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
15	2	3.987T	0.000	0.000		0.000
	5	3.987T	0.000	0.000		@ 0.744
16	3	3.987T	0.000	0.000		0.000
	11	3.987T	0.000	0.000		@ 0.807

Support Reactions (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Support Reactions (kN and kN.m)			Node	Support Reactions (kN and kN.m)		
	Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)		Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)
1	0.000	4.835	0.000	4	0.000	4.083	0.000
Total	0.000	8.918	0.000				

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Checked :
Approved :

Nodal Deflections (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Nodal Def. (mm and Degrees)				Node	Nodal Def. (mm and Degrees)			
	δ X →	δ Y ↑	ΦZ ↗	δ XY		δ X →	δ Y ↑	ΦZ ↗	δ XY
1	0.00	0.00	-0.09	0.00	2	0.00	-0.89	-0.12	0.89
3	0.11	0.38	0.00	0.40	4	0.11	0.00	-0.07	0.11
5	1.23	0.00	-0.11	1.23	6	2.33	-0.99	-0.15	2.53
7	4.28	-2.82	0.02	5.12	8	1.15	-0.26	0.24	1.18
9	4.19	2.38	-0.01	4.82	10	1.70	0.44	-0.11	1.76
11	1.07	0.00	-0.04	1.07					

Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
1	1	0.000C	-0.445	0.000		0.009
	2	0.000C	-0.530	-0.219		@ 0.261
2	1	7.120C	0.000	0.000		0.000
	5	7.120C	0.000	0.000		@ 0.643
3	5	3.740C	-0.173	0.000		0.065
	6	3.447C	-0.418	-0.207		@ 0.414
4	6	5.033C	0.919	-0.207	0.317	0.677
	7	3.799C	-0.117	0.304	@ 1.245	@ 0.850
5	7	1.743C	0.030	0.304	0.305	0.746
	8	1.186C	-0.438	0.000	@ 0.089	@ 0.670
6	8	2.065C	-0.301	0.000		0.811
	9	2.153C	-0.375	-0.503		@ 0.864
7	9	3.229C	0.595	-0.503		0.391
	10	3.381C	0.468	0.276		@ 0.454
8	10	4.381C	-0.363	0.276		0.106
	11	4.454C	-0.424	0.000		@ 0.302
9	4	8.050C	0.000	0.000		0.000
	11	8.050C	0.000	0.000		@ 0.705
10	2	2.532T	1.301	-0.219	0.754	2.635
	3	2.532T	-2.005	-1.557	@ 1.482	@ 1.596
11	3	0.000C	3.502	-1.557		0.067
	4	0.000C	3.416	0.000		@ 0.189
12	7	1.434C	0.201	0.000	0.096	1.474
	9	1.434C	-0.201	0.000	@ 0.958	@ 0.958
13	2	2.370C	0.000	0.000		0.000
	6	2.370C	0.000	0.000		@ 1.064
14	3	1.306T	0.000	0.000		0.000
	10	1.306T	0.000	0.000		@ 0.722

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Consulting Structural and Civil Engineers
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Lincolnshire PE11 1TW
Telephone: 01775 712660 Fax: 01775 712635

Job Ref : 15103
Sheet : 12
Made by : A.S
Date : 04 April 2003 / Ver. 2001.12
Checked :
Approved :

Member Forces (Loading Case 01 : DEAD+SUPERIMPOSED)

Member No.	Node End1 End2	Axial Force (kN)	Shear Force (kN)	Bending Moment (kN.m)	Maximum Moment (kN.m @ m)	Maximum Deflection (mm @ m)
15	2	5.043T	0.000	0.000		0.000
	5	5.043T	0.000	0.000		@ 0.789
16	3	5.043T	0.000	0.000		0.000
	11	5.043T	0.000	0.000		@ 0.538

Support Reactions (Loading Case 01 : DEAD+SUPERIMPOSED)

Node	Support Reactions (kN and kN.m)			Node	Support Reactions (kN and kN.m)		
	Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)		Rx→ (kN)	Ry↑ (kN)	Mz↗ (kN.m)
1	0.000	6.675	0.000	4	0.000	4.633	0.000
Total	0.000	11.308	0.000				

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MasterFrame Data File
Loading Cases and Load Combination

Load Group Labels

Load Group UT Unity Load Factor (All Cases)
Load Group N1

Loading Case 01 : DEAD+SUPERIMPOSED

Load Combination + 1.00 UT + 1.00 N1

The Nodal Co-ordinates

Node	X (m)	Y (m)	Z (m)	Node	X (m)	Y (m)	Z (m)
1	0.000	0.000	0.000	2	0.450	0.000	0.000
3	4.250	0.000	0.000	4	4.700	0.000	0.000
5	0.000	0.775	0.000	6	0.450	1.313	0.000
7	1.392	2.435	0.000	8	2.350	3.575	0.000
9	3.308	2.435	0.000	10	4.250	1.313	0.000
11	4.700	0.775	0.000				

Member Properties

Members 1, 10-11
M ... ... 75x200 E 006.0E6 G 00.4E6
Members 2, 9
M ... ... 450x215 E 026.0E6 G 10.0E6
Members 3-8
M ... ... 50x150 E 006.0E6 G 00.4E6
Members 12-16
M ... ... 50x100 E 006.0E6 G 00.4E6

Member Loading

Members 1, 11
N1 UDLY -000.190 (kN/m)
Members 2, 9, 13-16
Member 3
N1 UDLY -000.760 (kN/m)
N1 UDLY -000.090 (kN/m)
Member 4
N1 UDLY -000.380 (kN/m)
N1 UDLY -000.090 (kN/m)
N1 UDLY -000.720 (kN/m)
N1 TY1 -000.490 (kN)
Member 5
N1 UDLY -000.760 (kN/m)
Member 6
N1 UDLY -000.120 (kN/m)
Members 7-8, 12
N1 UDLY -000.120 (kN/m)
N1 UDLY -000.090 (kN/m)
Member 10
N1 UDLY -000.190 (kN/m)
N1 UDLY -000.680 (kN/m)

Member End Releases

1	●○○	●●●	2	●●●	●○○	6	●○○	●●●	9	●●●	●○○
11	●●●	●○○	12	●○○	●○○	13	●○○	●○○	14	●○○	●○○
15	●○○	●○○	16	●○○	●○○						

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Sheet : 14
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Nodal Loading and Support Conditions

NODE 8
N1 Ls +0000.000 -0002.400 +0000.000 +0000.000 +0000.000 +0000.000
NODES 2-3
N1 Ls +0000.000 -0000.160 +0000.000 +0000.000 +0000.000 +0000.000
NODE 6
N1 Ls +0000.000 -0000.300 +0000.000 +0000.000 +0000.000 +0000.000
NODE 7
N1 Ls +0000.000 -0001.280 +0000.000 +0000.000 +0000.000 +0000.000
NODE 1
UT Rs 1 1 1 0 0 0
NODE 4
UT Rs 0 1 0 0 0 0 (Vertical Restraint)

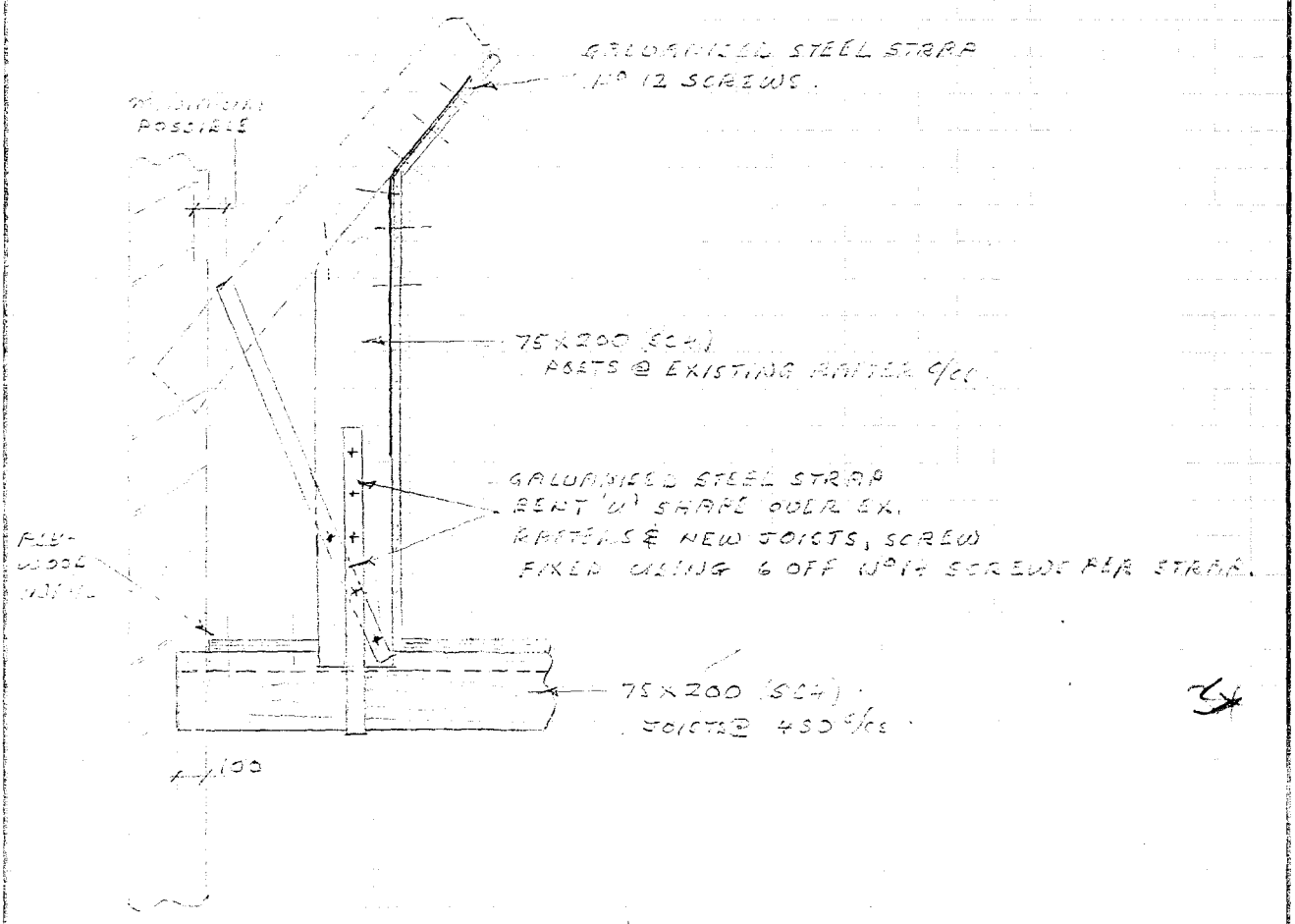
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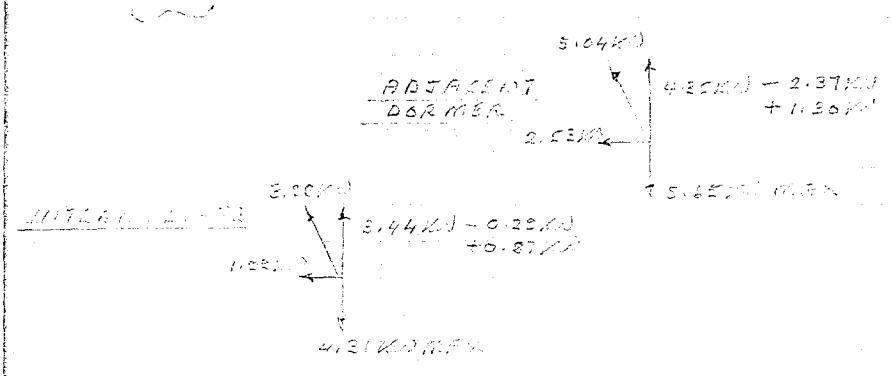
Project No.	15103	
Sheet No.	15	Rev.
Date		
Designer		

PROJECT:

USE TIMBER SECTION 75 x 200 (GRADE SC4) @ 450 c/c



3x 8x3"



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CONSULTING STRUCTURAL & CIVIL ENGINEERS

15 HIGH STREET
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Tel : (01775) 712660
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JOB NO 15103
SHEET NO. 16
DATE
PREPARED

GENERAL MATERIALS SPECIFICATION

All designated lintels or beams to be in Grade Fe 430B Mild Steel in accordance with BS EN 10 025.

All brickwork to have a minimum Compressive Strength of 20 N/mm² and bonded with a 1:1:6 mortar.

All loadbearing blockwork walls to be solid and have a minimum Compressive Strength of 3.5 N/mm² and bonded with a 1:1:6 mortar.

Any structural timber to be G.S. Grade, Strength Class SC3, in accordance with BS 5268 Part 2, 194 or as specified by specialist supplier.

Any lintels or beams supported by blockwork walls to sit on concrete padstones, or Engineering Bricks (3 courses deep).

Mass concrete foundations to be minimum Grade C20 with a minimum O.P.C. content of 22 Kg/cu.m and a water cement ratio of 0.60.

Reinforced foundations to be minimum Grade C35 with a minimum O.P.C. content of 300 Kg/cu.m and a water cement ratio of 0.60 with 20mm coarse aggregate.

Reinforcing bars to be High Yield Steel with a minimum yield strength of 460 N/mm² in accordance with BS 4461, or Mild Steel with a minimum yield strength of 250 N/mm² in accordance with BS 4449.

Reinforcing Mesh Fabric to be High Yield with a minimum yield strength of 460 N/mm² in accordance with BS 4483.

Minimum cover to reinforcement to be 75mm.

Concrete to be compacted using an immersion vibrator to form a consistent dense material. No concrete to be poured if the ambient temperature is less than 2 degrees Centigrade.

Minimum lap to reinforceing bars to be 40 times bar diameter unless noted otherwise.

Minimum lap to mehs fabric to be 300mm unless noted otherwise.

Our Ref: CG/PEEA00805/3289R

Ventrolla®
SASH WINDOW RENOVATION SPECIALISTS

East Anglia
Unit 9A
Charles Industrial Estate
Stowupland Road
Stowmarket
Suffolk
IP14 5AH

Telephone 01449 774600
Facsimile 01449 774434
Website www.ventrolla.co.uk

DETERMINED
PLAN

Mr Ian Williams
Maple House
Church Lane
Wyberton
Boston
PE21 7AF

22 April 2003

SCHEDULE OF WORK

To supply and install the Ventrolla Perimeter Sealing System, together with remedial work and repairs as stated, based on re-inspection of windows carried out on 27 March 2003, as follows at **The Old Vicarage, Pinchbeck**:

Second Floor Attic

Window 2F/W1
Supply and fit (into existing opening) new casement vent window with 1no opening light and 1no fixed light, manufactured from selected treated softwood with hardwood, fully glazed, in a primer finish, complete with new stay and the Ventrolla Perimeter Sealing System

Window 2F/W2
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 2/2 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system

Window 2F/W3 (left hand)
new vertical sliding sash window as 2F/W2 above

Window 2F/W4 (right hand)
new vertical sliding sash window as 2F/W2 above

Window 2F/W5
new vertical sliding sash window as 2F/W2 above

Window 2F/W6
new vertical sliding sash window as 2F/W2 above

continued ... 2

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First Floor

Window 1F/W1
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new top and bottom sashes
Repair right hand outer cheek
Carry out VR90 fill repair to cill
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

Window 1F/W2
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new top and bottom sashes
Carry out VR90 fill repair to cill
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

Window 1F/W3
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Carry out VR90 repair to left hand tenon area to bottom sash
Repair meeting rail to bottom sash
Re-putty as necessary

Window 1F/W4
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Renew meeting rail to top sash
Re-putty as necessary

Window 1F/W5
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Carry out VR90 repairs to 2no tenon areas to bottom sash
Renew meeting rail to top sash
Hack out and reglaze 1no pane in 3mm character glass
Re- putty as necessary

continued ... 3

Window 1F/W6
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new top sash
Re-putty as necessary

Window 1F/W7
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new bottom sash
Renew meeting rail to top sash
Re-putty as necessary

Window 1F/W8
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Re-putty as necessary

Window 1F/W9
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new top and bottom sashes
(WINDOW IS CURRENTLY COVERED BY WALL INSIDE - THIS IS A PROVISIONAL COST SUM AS CANNOT BE INSPECTED UNTIL OPENED UP)

Window 1F/W10
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Carry out VR90 repair to left hand top tenon area
Re-putty as necessary

Window 1F/W11
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Repair 2no tenon joints to bottom sash
Carry out fill repairs to top and bottom sashes
Re-putty as necessary

continued ... 4

Window 1F/W12
Supply and fit (into existing opening) new casement vent window with 1no opening light and 1no fixed light, manufactured from selected treated softwood with hardwood, fully glazed, in a primer finish, complete with new stay and the Ventrolla Perimeter Sealing System

Window 1F/W13
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Hack out and reglaze 1no pane in 3mm character glass
Re-putty as necessary

Window 1F/W14
1no pivot window Ventrolla Treat
Supply and fit new fanlight catch

Window 1F/W15
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 6/6 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system
(DESIGN CHANGE - EXISTING WINDOW IS CASEMENT VENT)

Ground Floor

Window GF/W1
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Renew lower box assembly including hardwood cill
Supply and fit new top and bottom sashes
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

Window GF/W2
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new top and bottom sashes
(SASHES TO BE REPLACED AS BARS & MOULDINGS ARE NOT ORIGINAL DESIGN)

continued ... 5

Window GF/W3
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Supply and fit new bottom sash
Repair 2no tenon joints to top sash
Re-putty as necessary

Window GF/W4
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Carry out fill repair to bottom sash
Carry out fill repair to cill
Hack out and reglaze 2no panes in 3mm character glass
Re-putty as necessary

Window GF/W5
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Hack out and reglaze 1no pane in 3mm character glass
Re-putty as necessary

Window GF/W6
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Repair 1no tenon joint to right hand side of bottom sash
Re-putty as necessary

Window GF/W7
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Repair 1no tenon joint to top sash
Hack out and reglaze 2no panes in 3mm character glass
Re-putty as necessary

Window GF/W8
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Hack out and reglaze 1no pane in 3mm character glass
Re-putty as necessary

continued ... 6

Window GF/W9
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Re-putty as necessary

Window GF/W10
1no vertical sliding sash window Ventrolla Treat
Supply and fit new brass swivel centre catch
Re-putty as necessary

Window GF/W10A
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 6/6 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system

Window GF/W10B
new window as GF/W10A above

Window GF/W11
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 4/4 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system
(DESIGN CHANGE - EXISTING WINDOW IS CASEMENT VENT)

Window GF/W12
Supply and fit (into existing opening), new vertical sliding sash window, sashes of 2/2 pane configuration, manufactured from selected treated softwood with hardwood cill, pulleys, cords and weights; fully glazed, in a primer finish for final painting by others; complete with new centre catch and the Ventrolla Perimeter sealing system
(DESIGN CHANGE - EXISTING WINDOW IS CASEMENT VENT)

Window GF/W13
Supply and fit (into existing opening) new fixed light manufactured from selected treated softwood with hardwood cill, with 6no panes glazed in 6.4mm laminated glass

continued ... 7

Garage

Supply and fit (into existing opening) 3no new fixed lights manufactured from selected treated softwood with hardwood cill (2no with 9no panes 1no with 6no panes), glazed in clear float glass

Notes

New sashes would be manufactured in selected, treated softwood.

New cills would be of iroko hardwood with linings and cheeks in selected, treated softwood.

Unless otherwise stated, white section will be used on the interior and exterior of all windows.

During the installation and included in the quoted price, all sashcords will be replaced.

Our price includes all add-weights which may be required to re-balance sashes. However, occasionally, where a window is inoperable, we find on stripping out that balance weights have been removed; should this be the case we can install new weights.

Should any faulty pulleys be encountered they will be replaced with our standard pulleys. will be Brass faced pulleys, if required, can be provided.

We only remove paint to facilitate easy movement of sashes and alignment, not for paint surface preparation. Any new joinery and planed surfaces will be left in white primer finish for final painting by others, unless otherwise stated.

Our price does not include any making good of external or internal masonry or plasterwork which may become dislodged during our installation as we consider this to be builder's or decorator's work.

We have not included for the removal or reinstatement of any fixtures or fittings, such as secondary glazing, curtains, blinds, pelmets, heat duct casings or radiators, etc, which may obstruct or prevent the works from being carried out as described above.

CLIENT : MR. WILLIAMS

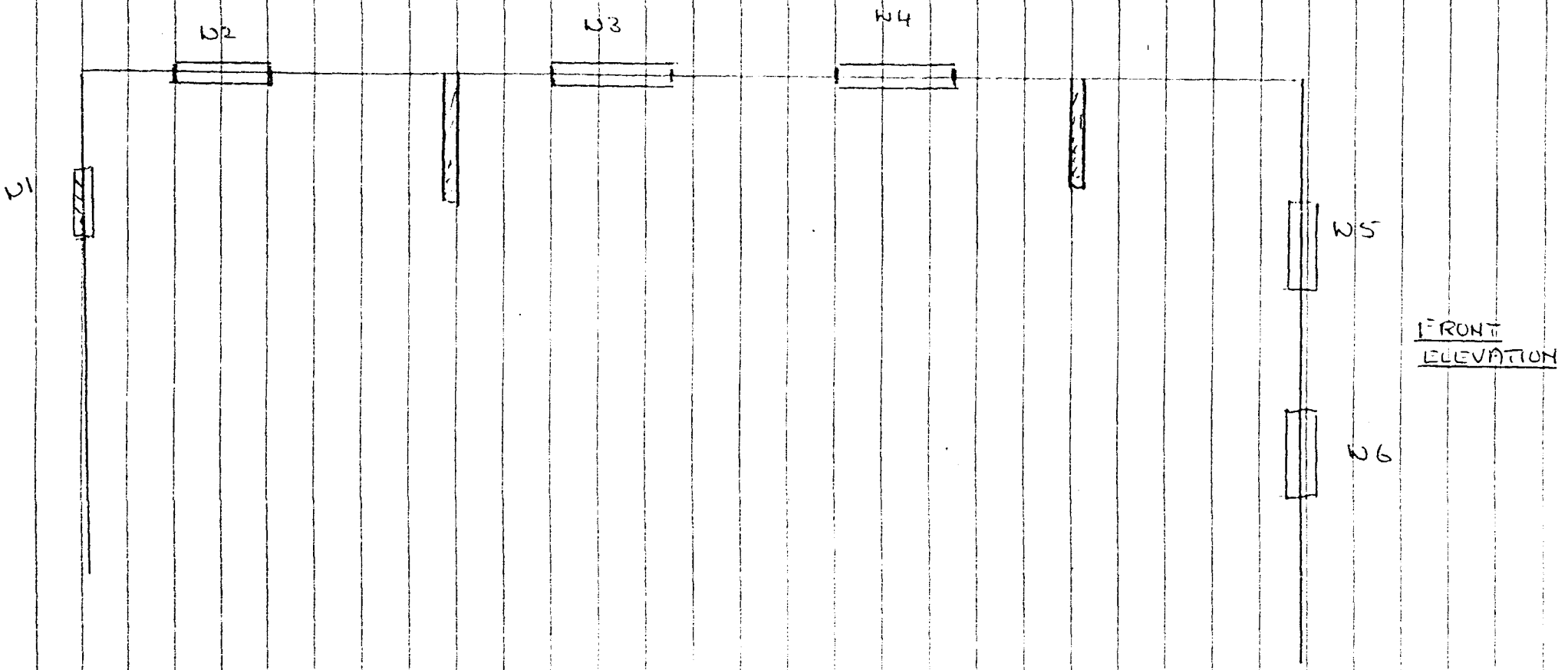
SITE : THE OLD RECTORY
PINCHBECK
LINCS

SOUTH ELEVATION

VENTROLLA
EAST
ANGLIA

27/03/03

ATTIC
2F



FRONT
ELEVATION

OUR REF: CG/PEEA00805/3289R.

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SASH WINDOW RENOVATION SPECIALISTS

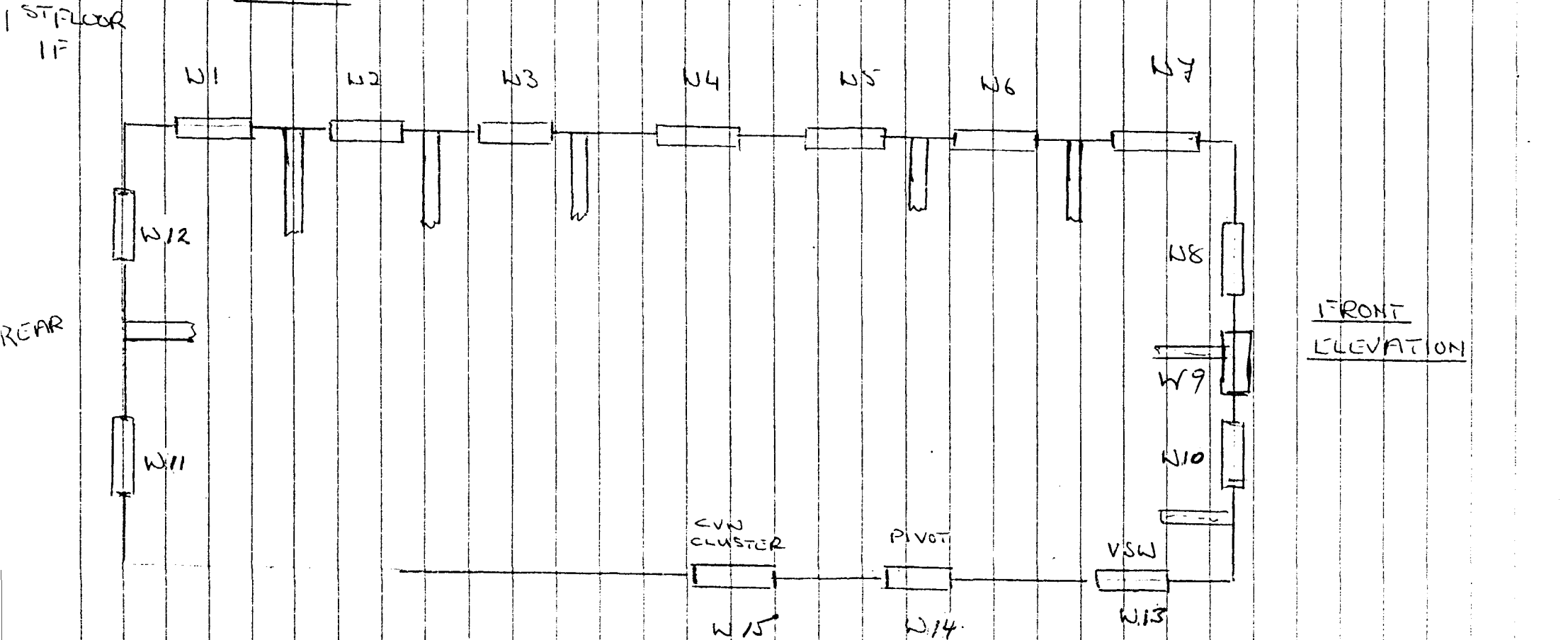
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SITE: THE OLD RECTORY
PINCH BECK
LINES

SOUTH
ELEV

VENTROLLA
EAST
ANGLIA

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IFRONT
ELEVATION

OUR REF: CG/PEEA 00805/328IK

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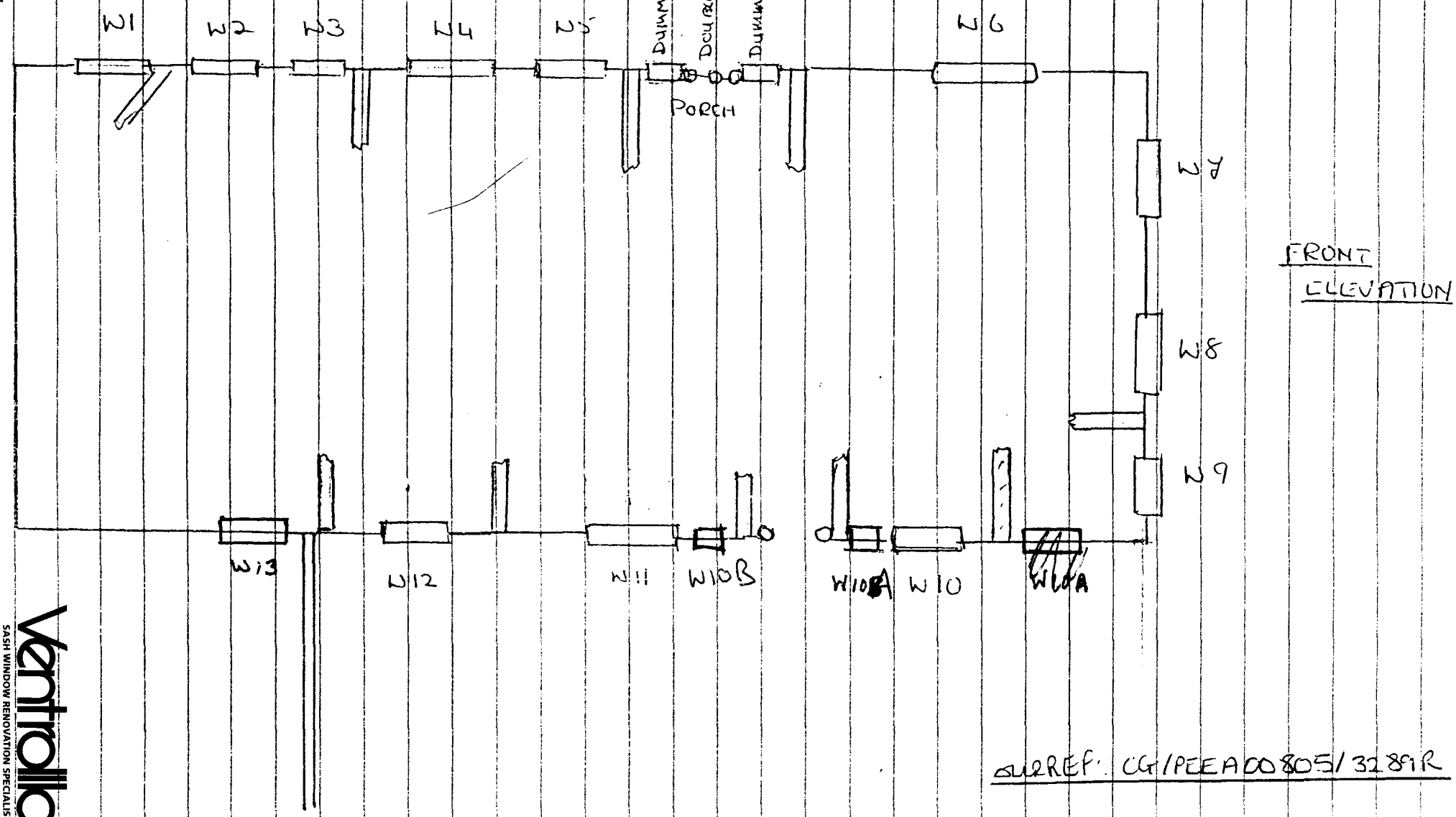
SITE: THE OLD RECTORY
PINCHBECK
LINCS

SOUTH ELEVATION

VENTROLLA
EAST
ANGLIA

27/03/03

GROUND
FLOOR
GF

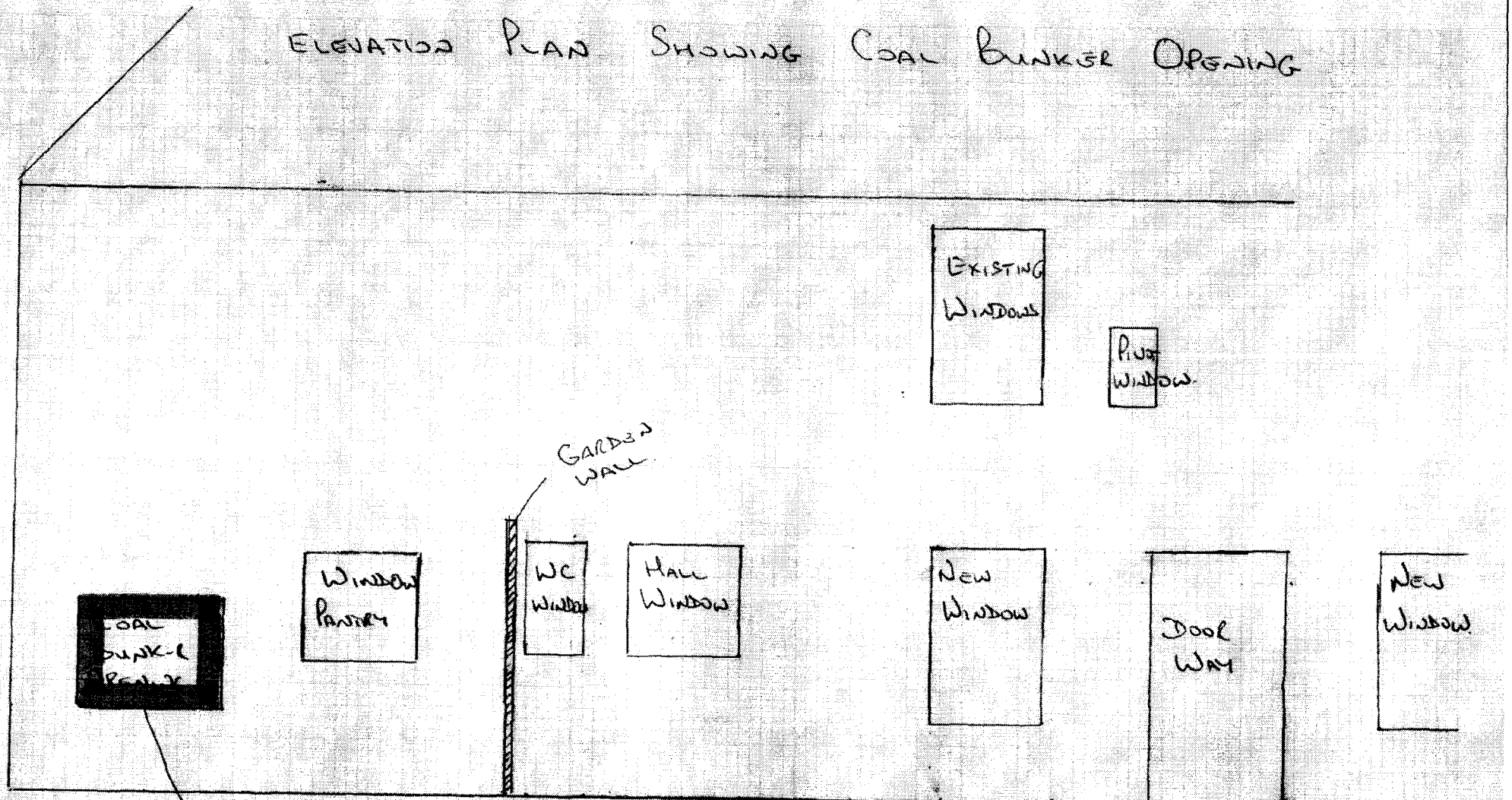


FRONT
ELEVATION

OUR REF: CG/PEEA00805/3289R

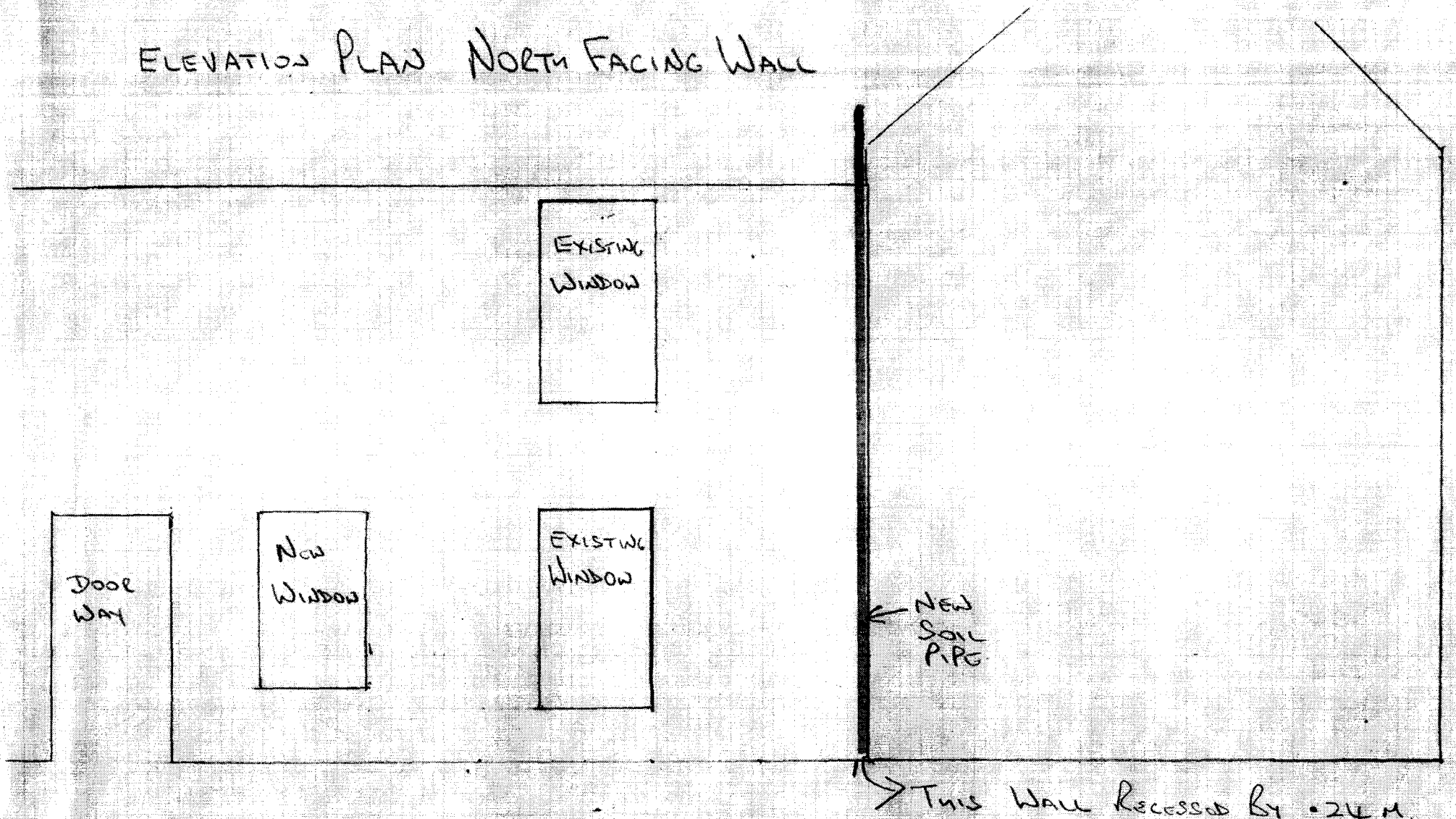
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Elevation Plan Showing Coal Bunker Opening

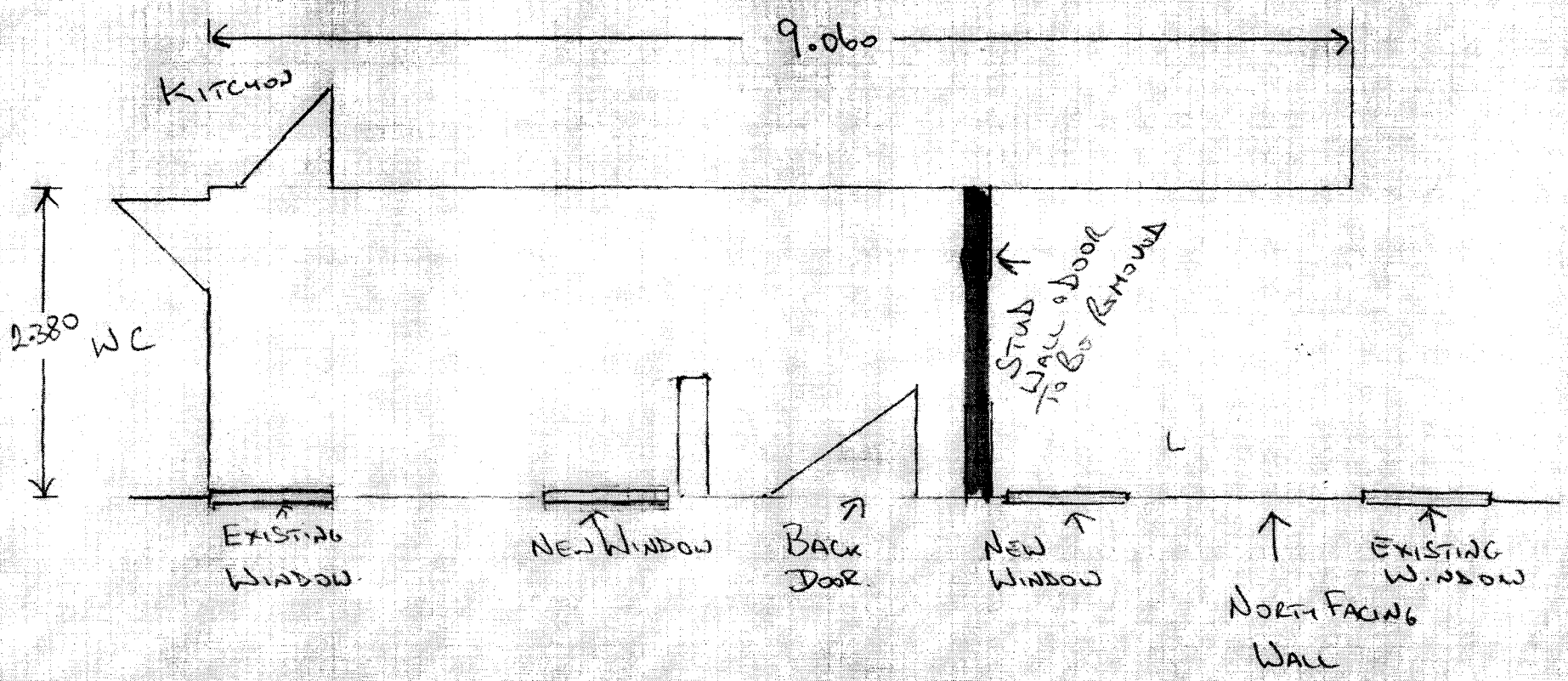


Opening To Be Bricked Up In Similar Brick Recessed 25mm To Show Old Opening
Lime Mortar To Be Used.

Elevation Plan North Facing Wall



Plan of Hall Showing Stud Wall & Door To Be Removed



Plan of New Partition On Landing

