

57 Ferrie Fields
High Wycombe
Bucks HP12 4SN

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C/08/193

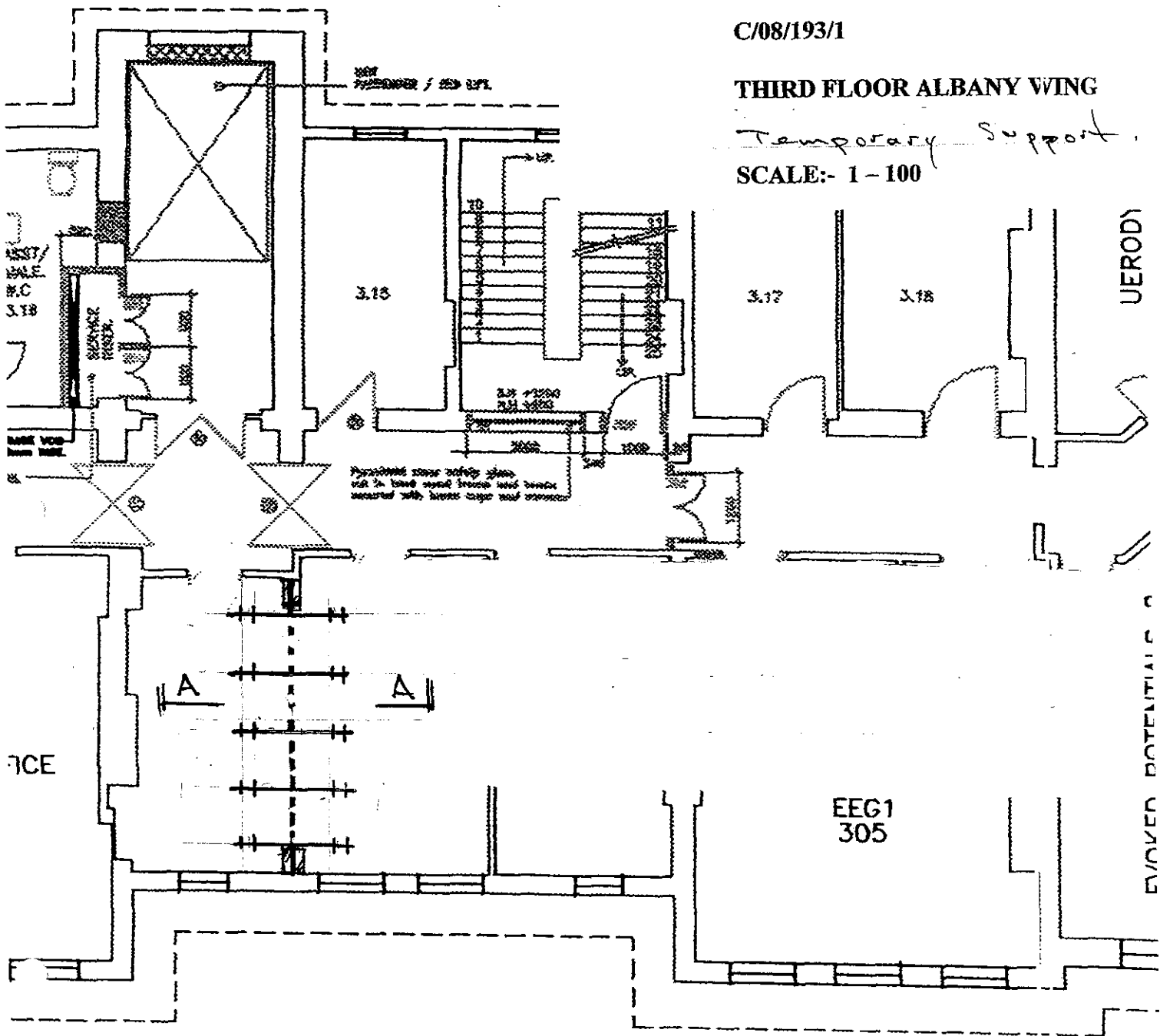
STRUCTURAL DETAILS
FOR
PROPOSED TEMPORARY SUPPORT
AT
NATIONAL HOSPITAL
ALBANEY WING

DEC 08.

**SUGGESTED SEQUENCE OF OPERATIONS FOR REMOVAL OF WALL AT
THIRD FLOOR LEVEL (SEE C/08/193/1 AND 2)**

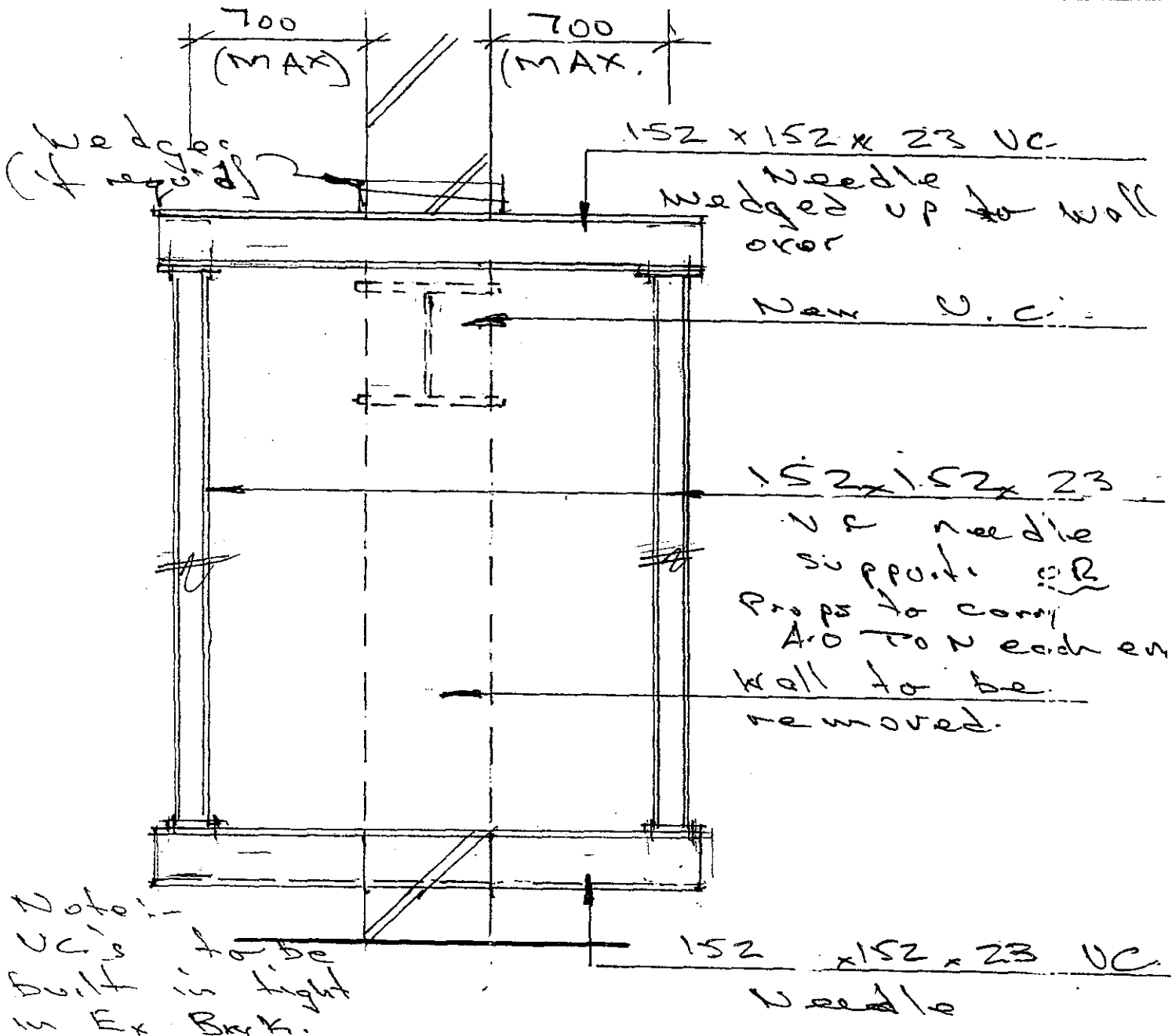
- 1 CUT OUT LOCALLY AND FORM NEW PEIRS AND PADSTONES.
- 2 PROVIDE 152 X 152 X 23 UC NEEDLES AT 1.0MC/C ABOVE
PROPOSED BEAM LEVEL TO SUPPORT WALL OVER, SUPPORTED
ON 152 x 152 x 23 UC EACH END OF EACH NEEDLE.
- 3 CUT OUT BRICKWORK TO WALL LOCALLY, INSERT NEW BEAM
OVER AND WEDGE AND PIN UP. (SEE C/08/193/1 AND 2)
- 4 REMOVE NEEDLE AND PROPS, COMPLETE DEMOLITION.

Temporary Support.
SCALE:- 1-100



ATIONAL HOSPITAL FOR
OLOGY AND NEUROSURGERY
ENABILITIES AND THERAPY SERVICES
RD FLOOR - ALBANY WING
OPPOSED FLOOR PLAN.

Site Albany Wing	Date Dec 08	Job no C/O B/103
	Designed by R3	Sheet no 08/103



TYPICAL PROPPING DETAIL

Note: connections between needle supports and needles may be 12mm plate and N. M16 bolts as shown side welded.

TEDDS Robert Austin Associates 57 Fernie Fields High Wycombe Bucks, HP12 4SN	Project				Job Ref.	
	NAT HOS ALBANEY				C/08/193	
	Section				Sheet no./rev.	
NEEDLE				4/ 1		
Calc. by	Date	Chck'd by	Date	App'd by	Date	
RJA	11/12/2008					

Analysis for a simply-supported single-span beam to BS 5950 (with LTB)

Span length & partial factors for loading

Span (mm)	Factors for moments & forces			Factors for deflection		
	γ_{fd}	γ_{fi}	γ_{fw}	γ_{dd}	γ_{di}	γ_{dw}
1500	1.40	1.60	0.00	1.00	1.00	1.00

Load descriptions

Loads are applied normal to the major principal axis (x-axis) of the member.

Ref.	Category	Description
1	"Imposed"	"WALL"
2	"Dead"	"WALL"

Loading data (unfactored)

Ref.	Category	Type	Load kN/m	Position mm	Load kN/m	Position mm
1	"Imposed"	Point load	27.0 kN	750	-	-
2	"Dead"	Point load	55.0 kN	750	-	-

Analysis results - entire span

R_a kN (fac)	R_b kN (fac)	F_{vy} kN (fac)	M_x kNm (fac)	Sense	Deflection: δEI_x kNm ³	Direction
60.1	60.1	60.1	45.1	"Sagging"	5.77	"Down"

Unfactored support reactions

Support A	Dead load	-27.5 kN	Live load	-13.5 kN	Wind load	0.0 kN
Support B	Dead load	-27.5 kN	Live load	-13.5 kN	Wind load	0.0 kN

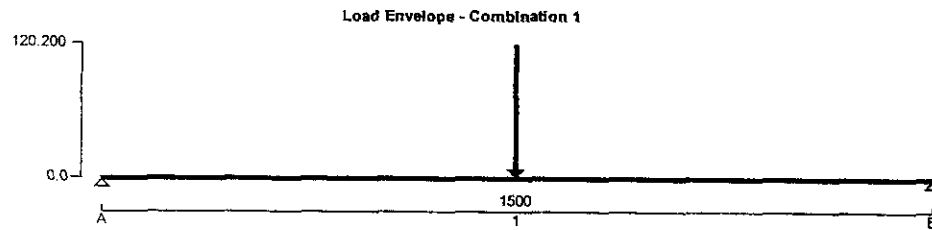
LTB segment results

Seg.	x_s mm	x_e mm	L_{LT} mm	M_{LT} kNm (fac)	M_{mLT2} kNm (fac)	M_{mLT3} kNm (fac)	M_{mLT4} kNm (fac)
1	0	1500	1500	45.1	22.5	45.1	22.5

Beam Loads



TEDDS Robert Austin Associates 57 Fernie Fields High Wycombe Bucks, HP12 4SN	Project NAT HOS ALBANEY				Job Ref. C/08/1513	
	Section NEEDLE				Sheet no./rev. 4/ 2	
	Calc. by RJA	Date 11/12/2008	Chck'd by	Date	App'd by	Date



Member design checks for a simply-supported single-span beam to BS 5950 (with LTB)

Summary of results

Material	Grade = "S275" $p_y = 275 \text{ N/mm}^2$			
Section	"UC 152x152x23"	Classification	"Semi-Compact"	
Check	Load	Capacity	Notes	Result
Shear	$F_{vy} = 60.1 \text{ kN}$	$P_{vy} = 145.8 \text{ kN}$	Low shear	Pass
Moment	$M_x = 45.1 \text{ kNm}$	$M_{cx} = 45.1 \text{ kNm}$	Low shear	Pass
LTB	$M_{LT} = 45.1 \text{ kNm}$	M_b / m_{LT} $= 53.1 \text{ kNm}$	$L_{E_LT} = 1.5 \text{ m}$ $m_{LT} = 0.85$	Pass

CSC TEDDS Robert Austin Associates 57 Fernie Fields High Wycombe HP12 4SN	Project				Job Ref.	
	NAT HOS ALBANEY				C/08/193	
	Section				Sheet no./rev.	
NEEDLE COL				4/ 3		
Calc. by	Date	Chk'd by	Date	App'd by	Date	
RA	11/12/2008					

SIMPLE COLUMN CALCS, SINGLE STOREY (S275)

Single storey column in simple construction to Cl. 4.7.7 (Grade S275).

Column geometry & applied loads

Column section to check UC 152x152x23 L = 2.40 m

Loads at top of column section

Axial load from above $F_a = 0 \text{ kN}$
 Beam A end reaction $R_{ax1} = 60 \text{ kN}$ Nominal eccentricity $e_{a1} = 176 \text{ mm}$
 Beam B end reaction $R_{bx1} = 0 \text{ kN}$ Nominal eccentricity $e_{b1} = 176 \text{ mm}$
 Beam C end reaction $R_{cy1} = 0 \text{ kN}$ Nominal eccentricity $e_{c1} = 103 \text{ mm}$
 Beam D end reaction $R_{dy1} = 0 \text{ kN}$ Nominal eccentricity $e_{d1} = 103 \text{ mm}$
 Total axial load at top $F_{ct} = F_a + R_{ax1} + R_{bx1} + R_{cy1} + R_{dy1} = 60 \text{ kN}$
 Net moment about major axis $M_{xt} = \text{abs}(R_{ax1} \times e_{a1} - R_{bx1} \times e_{b1}) = 10.6 \text{ kNm}$
 Net moment about minor axis $M_{yt} = \text{abs}(R_{cy1} \times e_{c1} - R_{dy1} \times e_{d1}) = 0.0 \text{ kNm}$

Loads at bottom of column section

Total axial load at bottom $F_{cb} = F_{ct} + L \times 1.4 \times \text{Mass} \times g_{acc} = 61 \text{ kN}$
 Net moment about major axis $M_{xb} = 0 \text{ kNm}$
 Net moment about minor axis $M_{yb} = 0 \text{ kNm}$

Member capacity

From tables for UC 152x152x23 with $L_e = 2.40 \text{ m}$

$M_{bs} = 45.0 \text{ kNm}$ $P_{cx} = 743.0 \text{ kN}$ $P_{cy} = 559.6 \text{ kN}$

$F_{ct} / \min(P_{cx}, P_{cy}) + M_{xt} / M_{bs} + M_{yt} / (p_y Z_y) = 0.34$

$F_{cb} / \min(P_{cx}, P_{cy}) + M_{xb} / M_{bs} + M_{yb} / (p_y Z_y) = 0.11$

Pass - Simple column check

Cl. 4.7.7