COPP WILSON PETTITT MOORE

Consulting Civil & Structural Engineers

First Floor, Unit 7, Brook Business Centre
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STRUCTURAL CALCULATIONS

Project: 4 OVAL ROAD, LONDON, NW1 7EB Sheet No.: 01

Job No: 1602 2 Date: FEB '16

THESE CALCULATIONS HAVE BEEN PREPARED IN ACCORDANCE WITH (where appropriate) THE FOLLOWING CURRENT DOCUMENTS.

BS 6399: Design Loading for Buildings.
BS 5628: Code of Practice for use of Masonry.
BS 5268: Structural use of Timber.
BS 449: The use of Structural Steel in Building.
BS 5950: Structural use of Steelwork in Buildings.
BS 8110: Structural use of Concrete.
BS 5977: Lintels.
CP 2004: Foundations.
The Building Regulations.

LOADINGS: (Dead loads)

Plain tiles, battens & rafters	0.90 kN/m²
Interlocking tiles, battens & rafters	0.70 "
Real slate, battens & rafters	0.50 "
Imitation slate, battens & rafters	0.40 "
3 layer felt & chippings	0.30 "
20mm asphalt	0.45 "
Roof or floor boarding	0.10 "
Ceiling joists plus lath & plaster	0.40 "
Ceiling joists & plasterboard	0.20 "
Floor joists, board, lath & plaster	0.50 "
Floor joists, boards & plasterboard	0.30 "
215mm brick wall, 1 render & 1 plaster	4.80 "
250mm cavity wall, brick / block, render & plaster	2.70 "
103mm brick wall , 2 render & 2 plaster	3.00 "
100mm lightweight block wall plus 2 render & 2 plaster	1.60 "

Reinforced & dense concrete	24.00 kN/m³
Brickwork	20.00 "
Lightweight blockwork	6.00 "
Steel	76.93 "
Softwood	5.40 "

LOADINGS: (Imposed loads)

Ceiling	0.25 kN/m²
Floors (self contained dwelling)	1.50 "
Snow	1.50 kN/m³

Loadings are modified where appropriate, to take account of roof slopes, snow drifting and other variables.

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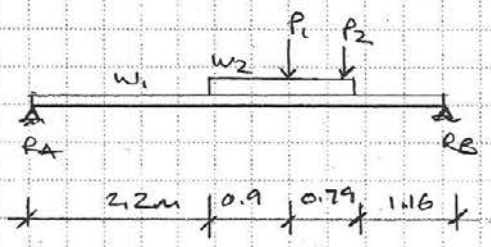
SHEET: 02
DATE: FEB '16
PROJECT: 4 OVAL ROAD
JOB NO.: 16022

BEAM G11

SPAN = 5.05m



LOADING

W1 = S/W OF BEAM 1.14 kN/m x 1.4 = 1.60 kN/m
GROUND FLOOR (0.5 + 1.5) kN/m2 x 1.5 x 7.8/2 = 11.7 "
W1 = 13.3 kN/m

W2 = FROM STUD WALL 0.5 kN/m2 x 1.4 x 3.2m = 2.24 kN/m
0.5 kN/m2 x 1.4 x 3.5/1.69 x 3.1m = 4.49 "
0.5 kN/m2 x 1.4 x 3.5/1.69 x 2.5m = 3.62 "
FLAT ROOF (0.8+0.78) kN/m2 x 1.5 x 5.2/2 x 3.5/1.69 = 12.52 "
FIRST, SECOND & THIRD FLOORS (0.5 + 1.5) kN/m2 x 1.5 x 7.8/2 x 3 x 3.5/1.69 = 72.69 "
W2 = 95.56 kN/m

P1 = FROM EXISTING BEAM: 0.5 kN/m2 x 1.4 x 3.9/2 x (9.55) = 13.04 kN

P2 = FROM STUD WALL: 0.5 kN/m2 x 1.4 x 3.2m x 1.25 = 2.8 kN

RA = 103.4 kN RB = 141.1 kN M = 220.5 kNm

TRY 254 x 254 UC 73 WITH 430 x 12mm THK. BOTTOM FLANGE PLATE.

I_x = 17290.5 x 10^4 mm^4

Le = 5.05m $M_b' = M_b / M_{LT}$ = 222.5 kNm / 0.925 = 249.5 kNm > 220.5 kNm O.K.

Mc = 273 kNm > 220.5 kNm

Pv = 361 kN > 141.1 kN O.K.

DEF = 10.14 mm < 5050/360 = 14.03 mm O.K.

PROVIDE 254 x 254 UC 73 WITH 430 x 12 mm THK BOTTOM FLANGE PLATE

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SHEET: 03
DATE: FEB '16
PROJECT: 4 OVAL ROAD
JOB NO.: 16022

SPREADER BEAMS TO BEAM G1 BEARINGS

LOCAL DESIGN STRENGTH OF EXISTING BRICK. $= 1.5 f_k / \gamma_m$

$f_k = 2.5 N/mm^2$ $\gamma_m = 3.5$

L.D.S. $= 1.5 \times 2.5 / 3.5 = 1.07 N/mm^2$

ASSUME WIDTH = 100mm $F = 141.1$ kN (ULS)

LENGTH REQUIRED $= 141.1 \times 10^3 / 1.07 \times 100 = 1319mm$

PROVIDE 1400mm LONG SPREADER BEAM.

$M = \left(\frac{141.1 kN}{1.4}\right)\left(\frac{1.4 - 0.254}{2}\right)^2 1/2 = 16.55$ kNm

$L_e = 2 \times (1.4/2) = 1.4m$

PROVIDE 203 x 102 UB 23, 1.4m LONG.

$M_D = 56.3$ kNm > 16.55 kNm $P_v = 181$ kN > 141.1 kN o/k

BEAM G4

SPAN = 1.75m

LOADING (ULS)

BRICK WALL 20 kN/m3 x 0.215 x 1.4 x 2.8m = 16.86 kN/m
SLAB 0.5 kN/m x 1.4 = 0.70 "
TOTAL = 17.56 kN/m

$R_A = R_B = 15.37$ kN

$M = 17.56 \times 1.75^2/8 = 6.72$ kNm

PROVIDE 150 x 90 PFC WITH 12mm BOTTOM FLANGE PLATE (GALVANISED)

$M_D = 44.9$ kNm > 6.72 kNm DEF = 0.64mm < 4.86mm

200mm BEARING AT EACH END.

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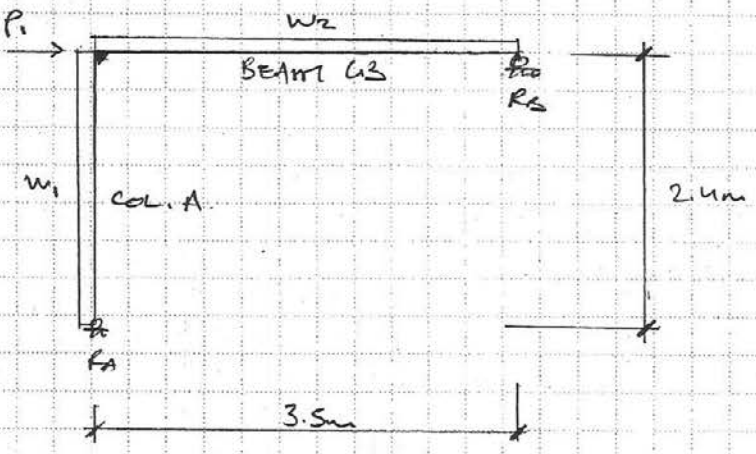
SHEET: 04
DATE: FEB '16
PROJECT: 4 OVAL ROAD
JOB NO.: 16022

BEAM G3 / COLUMN A



LOADING (UNFACTORED)

W_1 = WIND LOAD 0.5 kN/m2 x 5.2/2 = 1.3 kN/m
P_1 = WIND LOAD 0.5 kN/m2 x 2.4/2 x 2.8m = 1.68 kN

W_2 = DEAD LOADS:
FLAT ROOF 0.8 kN/m2 x 2.5/2 = 1.0 kN/m
GLAZED ROOF 0.6 kN/m2 x 2.6/2 = 0.78 "
BLK. WALL 20 kN/m3 x 0.225 x 2.7m x (0.80) = 9.72 "
GROUND FLOOR 0.5 kN/m2 x 2.2/2 = 0.55 "
SLW 0.8 kN/m = 0.80 "
W_2 = 12.85 kN/m

W_2 = IMPOSED LOAD:
FLAT ROOF 0.75 kN/m2 x 2.5/2 = 0.94 kN/m
GLAZED ROOF 0.75 kN/m2 x 2.6/2 = 0.98 "
GROUND FLOOR 1.5 kN/m2 x 2.2/2 = 1.65 "
W_2 = 3.57 kN/m

LOAD CASES

CASE 1: DEAD LOADS (1.4) + IMPOSED LOADS (1.6)
CASE 2: (DEAD + IMPOSED + WIND LOADS) 1.2

SEE COMPUTER ANALYSIS RESULTS.

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SHEET: 05
DATE: FEB '16
JOB NO.: 16022

PROJECT: 4 OVAL ROAD

BEAM G3

M_{MAX} = 26.4 kNm V = 47.6 kN

CHECK 152 x 152 UC 37 Le = 3.5m

M_b = 68.3 kNm > 26.4 kNm o.k.

P_v = 214 kN 60% P_v = 128 kN > 47.6 kN LOW SHEAR.

DEF = 6.25 / 1.2 = 5.2 mm < 3500/360 = 9.72mm o.k.

PROVIDE 152 x 152 UC 37 WITH TOP/BOTTOM FLANGE PLATES.

COLUMN A

F_c = 47.6 kN M_x = 21.4 kNm

CHECK 152 x 152 UC 37 Le = 2.4m

P_c = 928.7 kN M_{bs} = 85 kNm

$F_c/P_c + M_x/M_{bs}$ = 0.3 < 1.0 o.k.

HORIZ. DEF = 1.42/1.2 = 1.18mm < 2400/300 = 8mm o.k.

PROVIDE 152 x 152 UC 37

CADS	4 Oval Road, London NW1 7EB Beam G3 (Frame analysis)	Job No 16022 Job Ref Designed By TKS Checked By Date Feb. 2016 Revision No 1.0 Calc No 1.0 Page No 1

Members

Mbr ref	Member type	Start joint	Start fixity	End joint	End fixity	Orient (°)	Directional behaviour	Length (m)	P-Delta behaviour	Slope (°)
1	152x152 UKC37	1	Fixed	2	Fixed	0.0	Normal	2.400	Normal	90.0
2	152x152 UKC37	2	Fixed	3	Fixed	0.0	Normal	3.500	Normal	0.0
3	254x254 UC73	5	Fixed	3	Fixed	0.0	Normal	1.500	Normal	0.0
4	254x254 UC73	3	Fixed	4	Fixed	0.0	Normal	2.200	Normal	0.0

Joints

Joint ref	X pos (m)	Y pos (m)	Z pos (m)	Joint ref	X pos (m)	Y pos (m)	Z pos (m)	Joint ref	X pos (m)	Y pos (m)	Z pos (m)
1	0.000	0.000	0.000	2	0.000	2.400	0.000	3	3.500	2.400	0.000
4	3.500	2.400	-2.200	5	3.500	2.400	1.500				

Supports

Joint ref	Support type	X Trans. (kN/mm)	Y Trans. (kN/mm)	Z Trans. (kN/mm)	X Rot. (kNm/Rad)	Y Rot. (kNm/Rad)	Z Rot. (kNm/Rad)	Direction control
1	Pinned	Fixed	Fixed	Fixed	Free	Free	Free	Normal
4	Pinned	Fixed	Fixed	Fixed	Free	Free	Free	Normal
5	Pinned	Fixed	Fixed	Fixed	Free	Free	Free	Normal

Sections

Reference	Area (cm²)	Ixx (cm4)	Iyy (cm4)	J (cm4)	Elements (mm)				
					No	Width	Height	Vert. off	Lat. off
152x152 UKC37	47	2210	706	19.2					
254x254 UC73	93.1	11400	3910	57.6					

Materials

Material reference	Elastic modulus (kN/mm²)	Poisson ratio	Density (kN/m3)	Thermal expansion (/°Cx10-6)
UK-S275	205.00	0.30	77.00	12.00

Member Loads

Load reference	Load type	Start pos'n (m)	Start intensity (kN) & (m)	End pos'n (m)	End intensity (kN) & (m)	Direction	Category
Loads on member 1 (Length 2.400m)							
w1	UL		1.300			Horiz. (+X)	Wind
Loads on member 2 (Length 3.500m)							
w2	UL		12.850			Vertical (-Y)	Dead
w2	UL		3.570			Vertical (-Y)	Imposed

Joint Loads

Load reference	Load type	Intensity (kN) & (m)	Direction	Category (type)
Loads on Joint 2				
p1	JL	1.680	Horiz. (+X)	Wind (Other)

Load Combinations

Load Category			Partial Safety Factors		
No	Name	Type	Sub type	1	2
	Combination reference			Comb1	Comb2
	Limit state			ULS	ULS
	Elastic analysis			Linear	Linear
	Plastic analysis			No	No
1	Self Weight	Permanent	Self weight	0.00	0.00
2	Dead	Permanent	Permanent	1.40	1.20
3	Imposed	Variable	Cat A: domestic	1.60	1.20
4	Wind	Other	Other	0.00	1.20

Joint Displacements for Combination Comb1

Analysis Type : Linear elastic

Joint reference	Displacements (mm)			Rotations (°)		
	Dx	Dy	Dz	Rx	Ry	Rz
1	0.00	0.00	0.00	-0.019	-0.013	0.081
2	1.12	-0.12	-0.81	-0.019	-0.013	-0.243
3	1.09	-1.49	0.00	-0.018	-0.013	0.356
4	0.00	0.00	0.00	0.067	0.049	0.356
5	0.00	0.00	0.00	-0.076	-0.056	0.356

Joint Displacements for Combination Comb2

Analysis Type : Linear elastic

Joint reference	Displacements (mm)			Rotations (°)		
	Dx	Dy	Dz	Rx	Ry	Rz
1	0.00	0.00	0.00	-0.024	-0.017	0.044
2	1.42	-0.10	-1.02	-0.024	-0.017	-0.202
3	1.38	-1.23	0.00	-0.015	-0.017	0.296
4	0.00	0.00	0.00	0.056	0.062	0.296
5	0.00	0.00	0.00	-0.063	-0.071	0.296

Support Reactions for Combination Comb1

Analysis Type : Linear elastic

Joint reference	Support reactions (kN)			Support moments (kNm)		
	Px	Py	Pz	Mx	My	Mz
1	8.897	47.579	0.000	0.000	0.000	0.000
4	-3.607	14.342	0.000	0.000	0.000	0.000
5	-5.290	21.035	0.000	0.000	0.000	0.000

Support Reactions for Combination Comb2

Analysis Type : Linear elastic

Joint reference	Support reactions (kN)			Support moments (kNm)		
	Px	Py	Pz	Mx	My	Mz
1	5.519	39.550	0.000	0.000	0.000	0.000
4	-4.572	11.925	0.000	0.000	0.000	0.000
5	-6.707	17.489	0.000	0.000	0.000	0.000

Maximum Axial, Shear and Deflection effects for Combination Comb1

Member ref	Axial effects		Shear effects		Deflection effects					
	Compr'n (kN)	Tension (kN)	Normal (kN)	Lateral (kN)	Axial (mm)	Pos (m)	Normal (mm)	Pos (m)	Lateral (mm)	Pos (m)
1	47.579	0.000	-8.897	0.000	-0.12	2.400	1.14	1.202	-0.81	2.400
2	8.897	0.000	47.579	0.000	1.12	0.000	-7.52	1.937	-0.81	0.000
3	0.000	0.000	21.035	-5.290	0.00	1.500	-1.49	1.500	1.09	1.500
4	0.000	0.000	-14.342	3.607	0.00	0.000	-1.52	0.247	1.12	0.247

Maximum Axial, Shear and Deflection effects for Combination Comb2

Member ref	Axial effects		Shear effects		Deflection effects					
	Compr'n (kN)	Tension (kN)	Normal (kN)	Lateral (kN)	Axial (mm)	Pos (m)	Normal (mm)	Pos (m)	Lateral (mm)	Pos (m)
1	39.550	0.000	-9.263	0.000	-0.10	2.400	-1.42	2.400	-1.02	2.400
2	11.279	0.000	39.550	0.000	1.42	0.000	-6.25	1.937	-1.02	0.000
3	0.000	0.000	17.489	-6.707	0.00	1.500	-1.23	1.500	1.38	1.500
4	0.000	0.000	-11.925	4.572	0.00	0.000	-1.27	0.247	1.42	0.247

Max Moment Effects for Combination Comb1

Mbr ref	Torsion				Normal				Lateral			
	Anticlk (kNm)	Pos (m)	Clkwise (kNm)	Pos (m)	Max+ve (kNm)	Pos (m)	Max-ve (kNm)	Pos (m)	Max+ve (kNm)	Positio (m)	Max-ve (kNm)	Pos (m)
1	0.00	0.00	0.00	0.00	0.00	0.00	-21.35	2.40	0.00	2.40	0.00	0.00
2	0.00	0.00	0.00	0.00	26.40	2.01	-21.35	0.00	0.00	3.50	0.00	0.00
3	0.00	0.00	0.00	0.00	31.55	1.50	0.00	0.00	0.00	0.00	-7.94	1.50
4	0.00	0.00	0.00	0.00	31.55	0.00	0.00	2.20	0.00	2.20	-7.94	0.00

Max Moment Effects for Combination Comb2

Mbr ref	Torsion				Normal				Lateral			
	Anticlk (kNm)	Pos (m)	Clkwise (kNm)	Pos (m)	Max+ve (kNm)	Pos (m)	Max-ve (kNm)	Pos (m)	Max+ve (kNm)	Positio (m)	Max-ve (kNm)	Pos (m)
1	0.00	0.00	0.00	0.00	0.00	0.00	-17.74	2.40	0.00	2.40	0.00	0.00
2	0.00	0.00	0.00	0.00	21.95	2.01	-17.74	0.00	0.00	3.50	0.00	0.00
3	0.00	0.00	0.00	0.00	26.23	1.50	0.00	0.00	0.00	0.00	-10.06	1.50
4	0.00	0.00	0.00	0.00	26.23	0.00	0.00	2.20	0.00	2.20	-10.06	0.00

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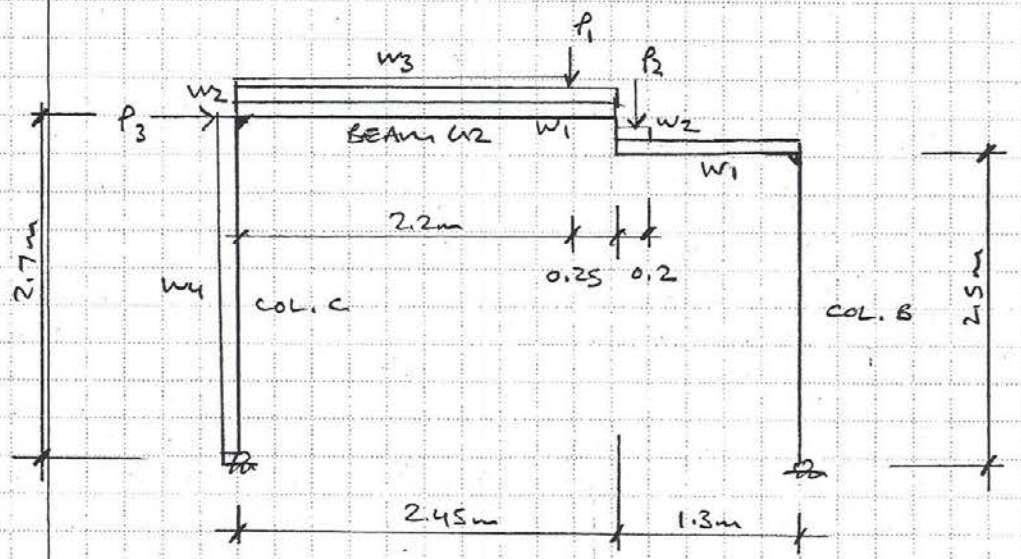
SHEET: 06
DATE: FEB '16
PROJECT: 4 OVAL ROAD
JOB NO.: 16022

BEAM G2 & COLUMNS B/C (FRAME)



LOADING (UNFACTORED)

W1 (DEAD LOADS) : S/W 1.2kN/m = 1.2 kN/m
GROUND FLOOR 0.5 kN/m2 x 3.8/2 = 0.95 "
W1 = 2.15 kN/m

W1 (IMPOSED LOADS) : GROUND FLOOR 1.5 kN/m2 x 3.8/2 W1 = 2.85 kN/m

W2 (DEAD LOADS) : 330mm BRK WALL
20 kN/m3 x 0.33 x 7.1m x (1.32) x 0.8 = 49.5 kN/m
215mm BRK WALL
20 kN/m3 x 0.215 x 4.1m x (1.32) x 0.8 = 18.62 "
FIRST, SECOND & THIRD FLOORS
0.5 kN/m2 x 4/2 x 3 x 1.32 = 3.96 "
ROOF 0.9 kN/m2 x 1.2m = 1.08 "
W2 = 73.16 kN/m

W2 (IMPOSED LOADS) : FIRST, SECOND & THIRD FLOORS
1.5 kN/m2 x 4/2 x 3 x 1.32 = 11.88 kN/m
ROOF 0.6 kN/m2 x 1.2m = 0.72
W2 = 12.6 kN/m

W3 (DEAD LOADS) : GLAZING 0.6 kN/m2 x 1.8m W3 = 1.08 kN/m

W3 (IMPOSED LOAD) : GLAZING 0.75 kN/m2 x 1.8m W3 = 1.35 kN/m

W4 (WIND LOAD) 0.5 kN/m2 x 11.8/2 = 2.95 kN/m
P3 (WIND LOAD) (0.5 kN/m2 x 8.6/2 x 11.3m) + (0.5 x 3.5/2 x 2.6) = 26.57 kN

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SHEET: 07
DATE: FEB '16
JOB NO.: 16022
PROJECT: 4 OVAL ROAD

P_1 = FROM BEAM G3 (D+I) : 35.4 kN / 1.5 = 23.6 kN

P_2 = FROM EXTG. BEAM 0.5 kN/m² x 3.9/2 x 9.55 m (DEAD) = 9.31 kN

LOAD CASES

CASE 1 : DEAD LOADS (1.4) + IMPOSED LOAD (1.6)
CASE 2 : (DEAD + IMPOSED & WIND LOADS) 1.2

SEE COMPUTER ANALYSIS RESULTS.

BEAM G2

M_{MAX} = 150.9 kNm V = 249 kN Le = 3.75 m

CHECK 254 x 254 UC 73 WITH 330 x 12 mm TOP FLANGE PLATE.

A = 132.7 x 10^2 mm² I_x = 16330.2 x 10^4 mm⁴

M_b = 250.5 kNm > 150.9 kNm O.K.

P_v = 361 kN > 249 kN O.K.

DEFLECTION = 6.5 mm / 1.5 = 4.3 mm < 3750/360 = 10.4 mm O.K.

PROVIDE 254 x 254 UC 73 WITH 330 x 12 mm TOP FLANGE PLATE

COLUMNS B/C

F_c = 249 kN M_x = 111.6 kNm

CHECK 203 x 203 UC 71

Le = 2.7 m P_c = 1912.5 kN M_{bs} = 212 kNm

$F_c/P_c + M_x/M_{bs}$ = 0.66 < 1.0 O.K.

HORIZ. DEF = 9.4 mm / 1.2 = 7.83 mm < 2500/300 = 8.33 mm O.K.

PROVIDE 203 x 203 UC 71

CADS	4 Oval Road, London NW1 7EB Beam G2 (Frame analysis)	Job No 16022 Job Ref Designed By TKS Checked By Date Feb. 2016 Revision No 1.0 Calc No 1.0 Page No 1

Members

Mbr ref	Member type	Start joint	Start fixity	End joint	End fixity	Orient (°)	Directional behaviour	Length (m)	P-Delta behaviour	Slope (°)
1	203x203 UKC71	1	Fixed	2	Fixed	0.0	Normal	2.700	Normal	90.0
2	254x254UC73 with 330x12	2	Fixed	3	Fixed	0.0	Normal	2.450	Normal	0.0
3	254x254UC73 with 330x12	3	Fixed	4	Fixed	0.0	Normal	0.200	Normal	-90.0
4	254x254UC73 with 330x12	4	Fixed	5	Fixed	0.0	Normal	1.300	Normal	0.0
5	203x203 UKC71	6	Fixed	5	Fixed	0.0	Normal	2.500	Normal	90.0

Joints

Joint ref	X pos (m)	Y pos (m)	Z pos (m)	Joint ref	X pos (m)	Y pos (m)	Z pos (m)	Joint ref	X pos (m)	Y pos (m)	Z pos (m)
1	0.000	0.000	0.000	2	0.000	2.700	0.000	3	2.450	2.700	0.000
4	2.450	2.500	0.000	5	3.750	2.500	0.000	6	3.750	0.000	0.000

Sections

Reference	Area (cm²)	Ixx (cm4)	Iyy (cm4)	J (cm4)	Elements (mm)				
					No	Width	Height	Vert. off	Lat. off
203x203 UKC71	90	7618	2537	80.2					
Prop A=133	132.7	16330.2	7501.5	0.001					

Supports

Joint ref	Support type	X Trans. (kN/mm)	Y Trans. (kN/mm)	Z Trans. (kN/mm)	X Rot. (kNm/Rad)	Y Rot. (kNm/Rad)	Z Rot. (kNm/Rad)	Direction control
1	Pinned	Fixed	Fixed	Fixed	Free	Free	Free	Normal
6	Pinned	Fixed	Fixed	Fixed	Free	Free	Free	Normal

Materials

Material reference	Elastic modulus (kN/mm²)	Poisson ratio	Density (kN/m3)	Thermal expansion (/°Cx10-6)
UK-S275	205.00	0.30	77.00	12.00

Member Loads

Load reference	Load type	Start pos'n (m)	Start intensity (kN) & (m)	End pos'n (m)	End intensity (kN) & (m)	Direction	Category
Loads on member 1 (Length 2.700m)							
w4	UL		2.950			Horiz. (+X)	Wind
Loads on member 2 (Length 2.450m)							
w1	UL		2.150			Vertical (-Y)	Dead
w1	UL		2.850			Vertical (-Y)	Imposed
w2	UL		73.160			Vertical (-Y)	Dead
w2	UL		12.600			Vertical (-Y)	Imposed
w3	UL		1.080			Vertical (-Y)	Dead

Member Loads (continued)

Load reference	Load type	Start pos'n (m)	Start intensity (kN) & (m)	End pos'n (m)	End intensity (kN) & (m)	Direction	Category
w3	UL		1.350			Vertical (-Y)	Imposed
p1	PL	2.200	23.600			Vertical (-Y)	Dead+Imposed
Loads on member 4 (Length 1.300m)							
w1	UL		2.150			Vertical (-Y)	Dead
w1	UL		2.850			Vertical (-Y)	Imposed
w2	DL	0.000	73.160	0.200	73.160	Vertical (-Y)	Dead
w2	DL	0.000	12.600	0.200	12.600	Vertical (-Y)	Imposed
p2	PL	0.200	9.310			Vertical (-Y)	Dead

Joint Loads

Load reference	Load type	Intensity (kN) & (m)	Direction	Category (type)
Loads on Joint 2				
p3	JL	26.570	Horiz. (+X)	Wind (Other)

Load Combinations

Load Category				Partial Safety Factors	
No	Name	Type	Sub type	1	2
	Combination reference			Comb1	Comb2
	Limit state			ULS	ULS
	Elastic analysis			Linear	Linear
	Plastic analysis			No	No
1	Self Weight	Permanent	Self weight	0.00	0.00
2	Dead	Permanent	Permanent	1.40	1.20
3	Imposed	Variable	Cat B: office	1.60	1.20
4	Dead+Imposed	Other	Other	1.50	1.20
5	Wind	Other	Other	0.00	1.20

Joint Displacements for Combination Comb1

Analysis Type : Linear elastic

Joint reference	Displacements (mm)			Rotations (°)		
	Dx	Dy	Dz	Rx	Ry	Rz
1	0.00	0.00	0.00	0.000	0.000	0.154
2	-1.00	-0.36	0.00	0.000	0.000	-0.244
3	-1.03	-5.78	0.00	0.000	0.000	0.134
4	-0.49	-5.77	0.00	0.000	0.000	0.176
5	-0.50	-0.22	0.00	0.000	0.000	0.239
6	0.00	0.00	0.00	0.000	0.000	-0.102

Joint Displacements for Combination Comb2

Analysis Type : Linear elastic

Joint reference	Displacements (mm)			Rotations (°)		
	Dx	Dy	Dz	Rx	Ry	Rz
1	0.00	0.00	0.00	0.000	0.000	-0.158
2	8.60	-0.26	0.00	0.000	0.000	-0.243
3	8.56	-4.35	0.00	0.000	0.000	0.126
4	9.05	-4.34	0.00	0.000	0.000	0.154
5	9.03	-0.22	0.00	0.000	0.000	0.134
6	0.00	0.00	0.00	0.000	0.000	-0.378

Support Reactions for Combination Comb1

Analysis Type : Linear elastic

Joint reference	Support reactions (kN)			Support moments (kNm)		
	Px	Py	Pz	Mx	My	Mz
1	29.741	248.775	0.000	0.000	0.000	0.000
6	-29.741	161.891	0.000	0.000	0.000	0.000

Support Reactions for Combination Comb2

Analysis Type : Linear elastic

Joint reference	Support reactions (kN)			Support moments (kNm)		
	Px	Py	Pz	Mx	My	Mz
1	3.201	181.003	0.000	0.000	0.000	0.000
6	-44.643	160.850	0.000	0.000	0.000	0.000

Maximum Axial, Shear and Deflection effects for Combination Comb1

Member ref	Axial effects		Shear effects		Deflection effects					
	Compr'n (kN)	Tension (kN)	Normal (kN)	Lateral (kN)	Axial (mm)	Pos (m)	Normal (mm)	Pos (m)	Lateral (mm)	Pos (m)
1	248.775	0.000	-29.741	0.000	-0.36	2.700	3.01	1.679	0.00	0.000
2	29.741	0.000	248.775	0.000	-1.03	2.450	-6.46	1.894	0.00	0.000
3	114.499	0.000	29.741	0.000	5.78	0.000	-1.03	0.000	0.00	0.000
4	29.741	0.000	-161.891	0.000	-0.50	1.300	-5.77	0.000	0.00	0.000
5	161.891	0.000	29.741	0.000	-0.22	2.500	-1.63	1.368	0.00	0.000

Maximum Axial, Shear and Deflection effects for Combination Comb2

Member ref	Axial effects		Shear effects		Deflection effects					
	Compr'n (kN)	Tension (kN)	Normal (kN)	Lateral (kN)	Axial (mm)	Pos (m)	Normal (mm)	Pos (m)	Lateral (mm)	Pos (m)
1	181.003	0.000	-12.759	0.000	-0.26	2.700	-8.60	2.700	0.00	0.000
2	44.643	0.000	181.003	0.000	8.60	0.000	-5.15	1.769	0.00	0.000
3	121.296	0.000	44.643	0.000	4.35	0.000	9.05	0.200	0.00	0.000
4	44.643	0.000	-160.850	0.000	9.05	0.000	-4.34	0.000	0.00	0.000
5	160.850	0.000	44.643	0.000	-0.22	2.500	-9.43	2.147	0.00	0.000

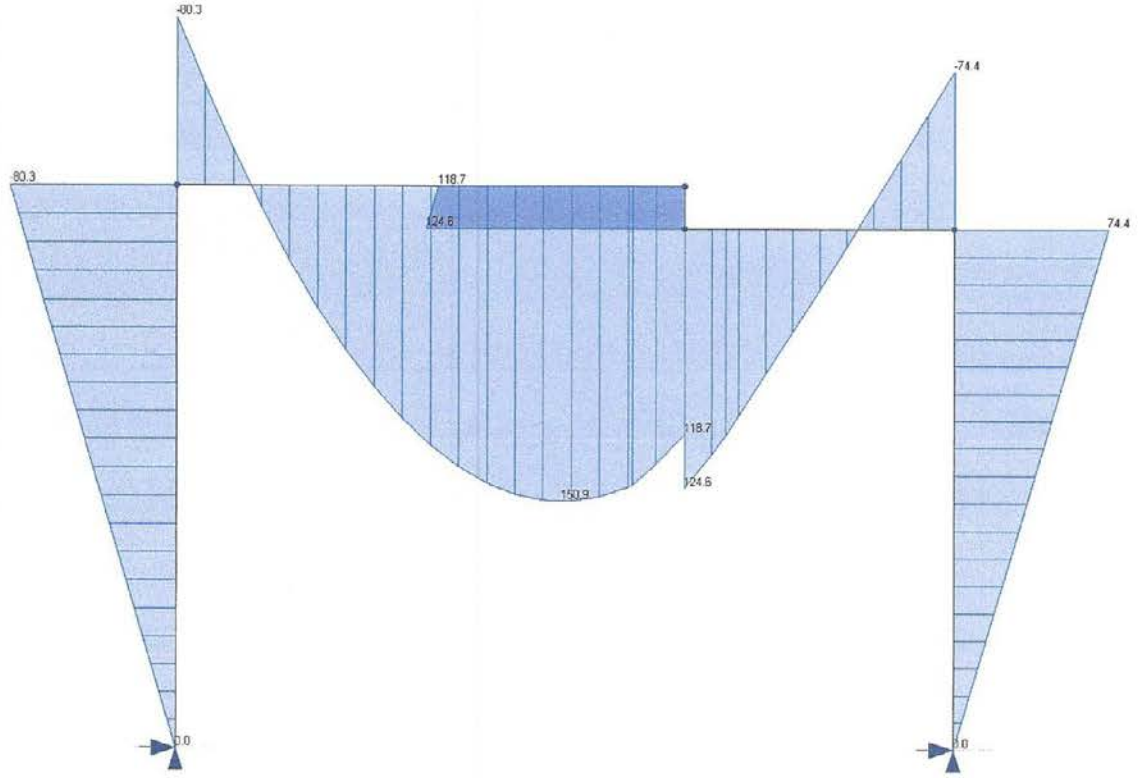
Max Moment Effects for Combination Comb1

Mbr ref	Torsion				Normal				Lateral			
	Anticlk (kNm)	Pos (m)	Clkwise (kNm)	Pos (m)	Max+ve (kNm)	Pos (m)	Max-ve (kNm)	Pos (m)	Max+ve (kNm)	Positio (m)	Max-ve (kNm)	Pos (m)
1	0.00	0.00	0.00	0.00	0.00	0.00	-80.30	2.70	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	150.93	1.86	-80.30	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	124.65	0.20	118.70	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	124.65	0.00	-74.35	1.30	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	74.35	2.50	0.00	0.00	0.00	0.00	0.00	0.00

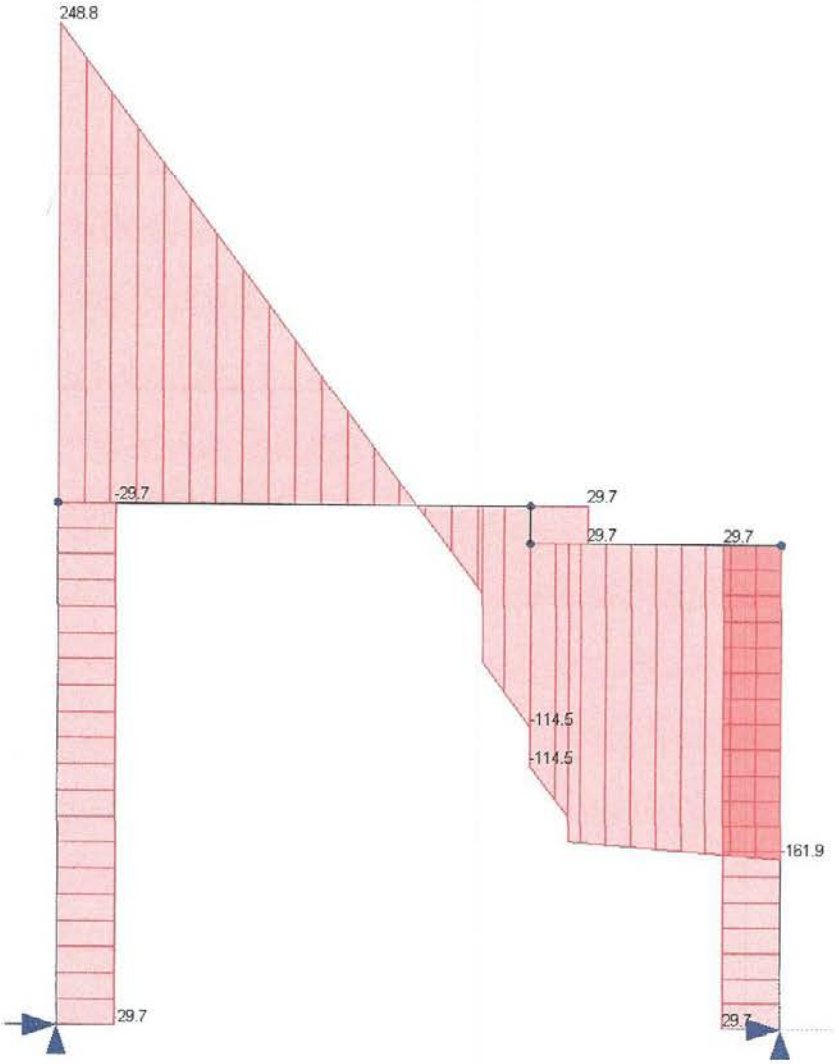
Max Moment Effects for Combination Comb2

Mbr ref	Torsion				Normal				Lateral			
	Anticlk (kNm)	Pos (m)	Clkwise (kNm)	Pos (m)	Max+ve (kNm)	Pos (m)	Max-ve (kNm)	Pos (m)	Max+ve (kNm)	Positio (m)	Max-ve (kNm)	Pos (m)
1	0.00	0.00	0.00	0.00	0.00	0.00	-21.55	2.70	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	124.94	1.62	-21.55	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	88.14	0.20	79.21	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	88.14	0.00	-111.61	1.30	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	111.61	2.50	0.00	0.00	0.00	0.00	0.00	0.00

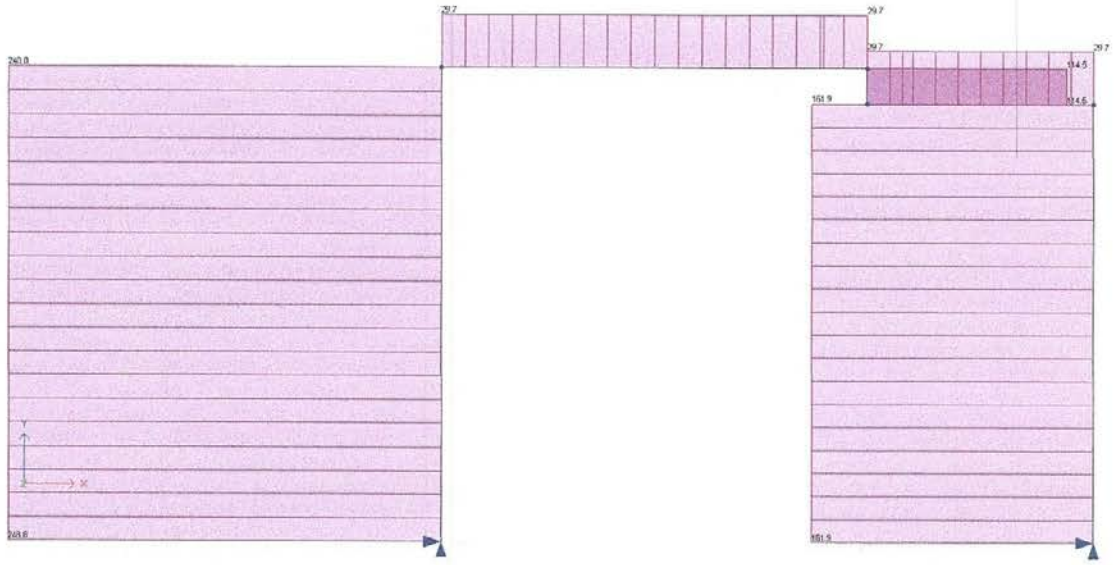
Load case 1: Bending moment diagram (kNm)



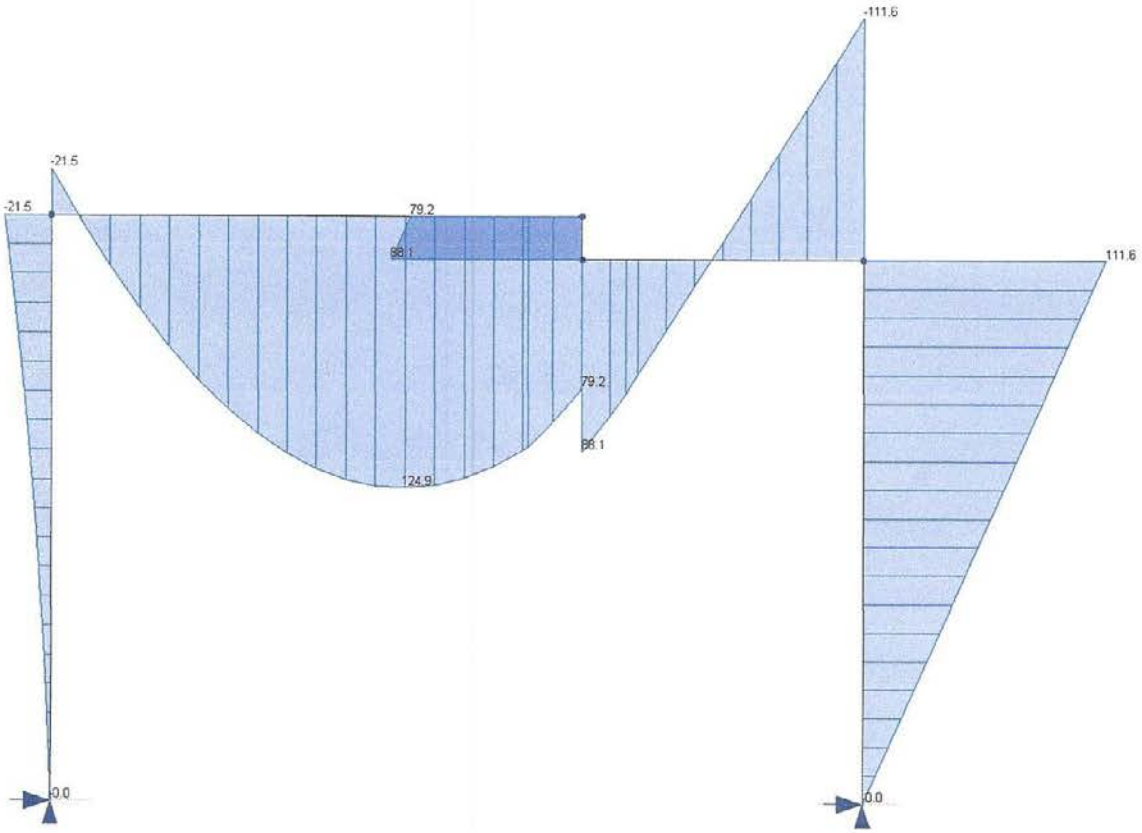
Load case 1: Shear force diagram (kN)



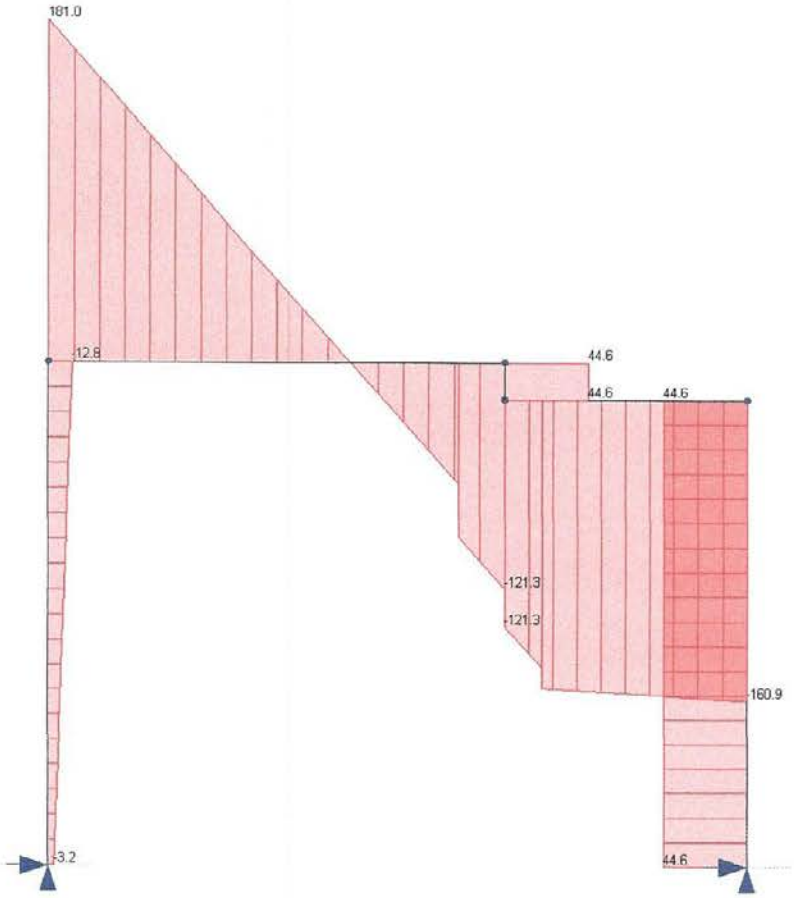
Load case 1: Axial force diagram (kN)



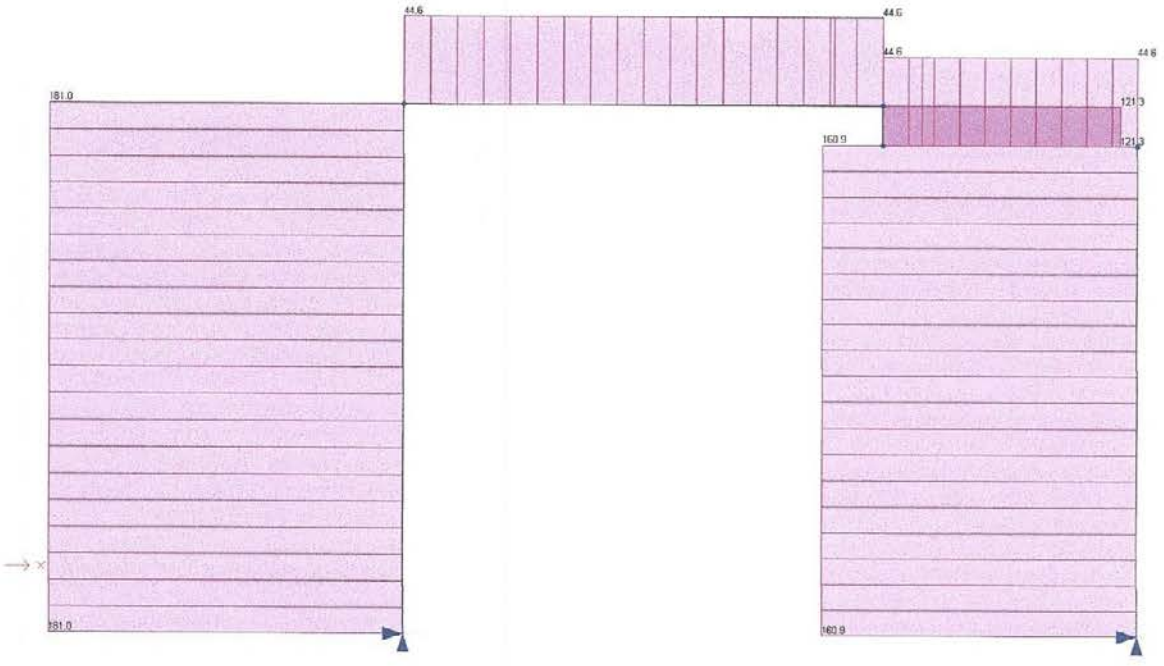
Load case 2: Bending moment diagram (kNm)



Load case 2: Shear force diagram (kN)



Load case 2: Axial force diagram (kN)



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SHEET: 08
DATE: FEB '16
PROJECT: 4 OVAL ROAD
JOB NO.: 16022

FOUNDATION TO COLUMN A

F = 47.6 kN / 1.5 + (20 x 0.215 x 0.44 x 5.3) = 41.8 kN

BEARING CAPACITY OF SOIL = 100 kN/m2 (ASSUMED FOR CLAY)

PAD SIZE REQUIRED = $\sqrt{41.8 \text{ kN} / 100}$ = 0.65 m

PROVIDE 750 mm x 750 mm MASS CONCRETE PAD FOUNDATION

FOUNDATION TO COLUMN C

F = 249 kN / 1.5 + 42.9 kN (FROM PIER) = 208.9 kN

PAD SIZE REQUIRED = $\sqrt{208.9 \text{ kN} / 100}$ = 1.45 m

PROVIDE 1500 x 1500 mm MASS CONCRETE PAD FOUNDATION

FOUNDATION TO COLUMN B

F = 162 kN / 1.5 + 6.6 kN = 114.6 kN

PAD SIZE REQUIRED = $\sqrt{114.6 / 100}$ = 1.07 m

PROVIDE 1200 x 1200 mm MASS CONCRETE PAD FOUNDATION

NEW WINDOW OPENING TO STUDY AT REAR OF UPPER GROUND FLOOR

SPAN = 0.9 m

LOADING

BULK. WALL 20 kN/m3 x 0.225/2 x 0.6 m = 1.35 kN/m

BY INSPECTION PROVIDE 140 DP. x 100 PRESTRESSED CONCRETE LINTEL TO INNER HALF OF WALL. OUTER WALL HALF SUPPORTED BY BULK. ARCH.

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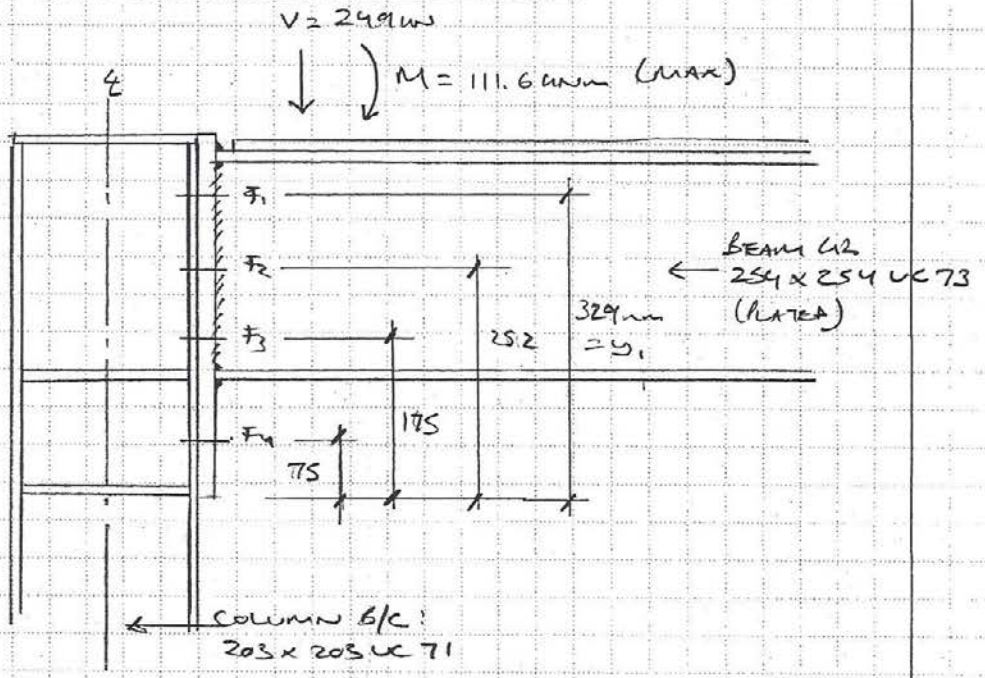
BEAM G2 CONNECTION TO COLUMNS B/C



TRY 8 NO. M24 GRADE 8.8 BOLTS AS SHOWN ABOVE.
$F_T = 158.1$ kN $F_V = 132.4$ kN

MAX. TENSION IN BOLT $F_1 = \frac{M y_1}{2\Sigma y_n^2} = \frac{111.6 \times 10^3 \times 329}{2(75^2 + 175^2 + 252^2 + 329^2)} = 88.26$ kN < 158.1 kN O.K.

SHEAR PER BOLT = 249 kN / 8 = 31.1 kN $<$ 132.4 kN O.K.

COMBINED SHEAR & TENSION = $31.1/132.4 + 88.26/158.1 = 0.79 < 1.4$ O.K.

PROVIDE 8 NO. M24 GRADE 8.8 BOLTS.

END PLATE:

$M = 88.26 \times 0.206/4 \times 1/2 = 2.27$ kNm

$S_2 = M/P_y = 2.27 \times 10^6 / 265 = 8566$ mm^3 $= bt^2/4$

$b = 88.5$ mm $t = \sqrt{8566 \times 4 / 88.5} = 19.67$ mm

PROVIDE 25mm THK. END PLATE WELDED TO BEAM USING 8mm FULL PROFILE FILLET WELDS

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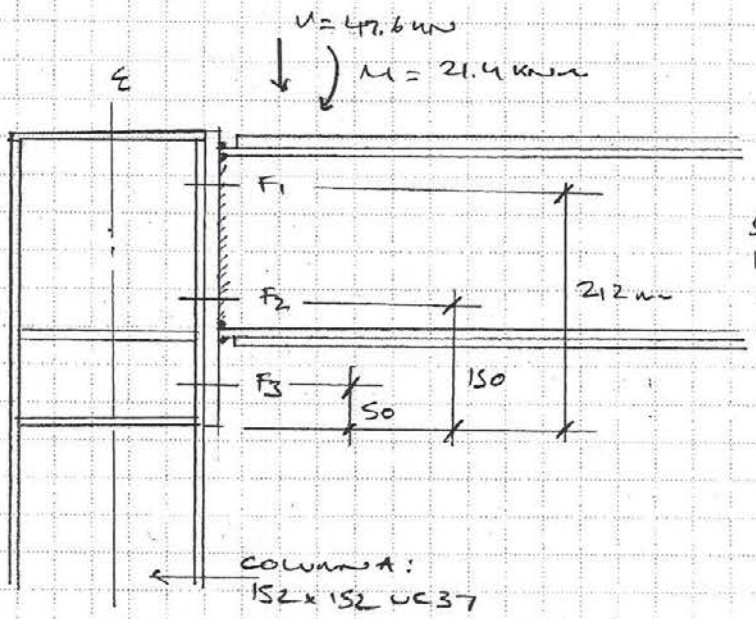
SHEET: 10
DATE: FEB '16
PROJECT: 4 OVAL ROAD
JOB NO.: 16022

BEAM G3 CONNECTION TO COLUMN A



TRY 6 NO. M16 GRADE 8.8 BOLTS AS SHOWN ABOVE.
$P_T = 70.3$ kN $P_V = 58.9$ kN

MAX. TENSION IN BOLT $F_1 = \frac{My_1}{2\Sigma y_n^2} = \frac{21.4 \times 10^3 \times 212}{2(50^2 + 150^2 + 212^2)} = 32.43$ kN < 70.3 kN O.K

SHEAR PER BOLT = 47.6 kN / 6 = 7.93 kN < 58.9 kN O.K

COMBINED SHEAR & TENSION = 7.93/58.9 + 32.43/70.3 = 0.60 < 1.4 O.K.

PROVIDE 6 NO. M16 GRADE 8.8 BOLTS.

END PLATE:

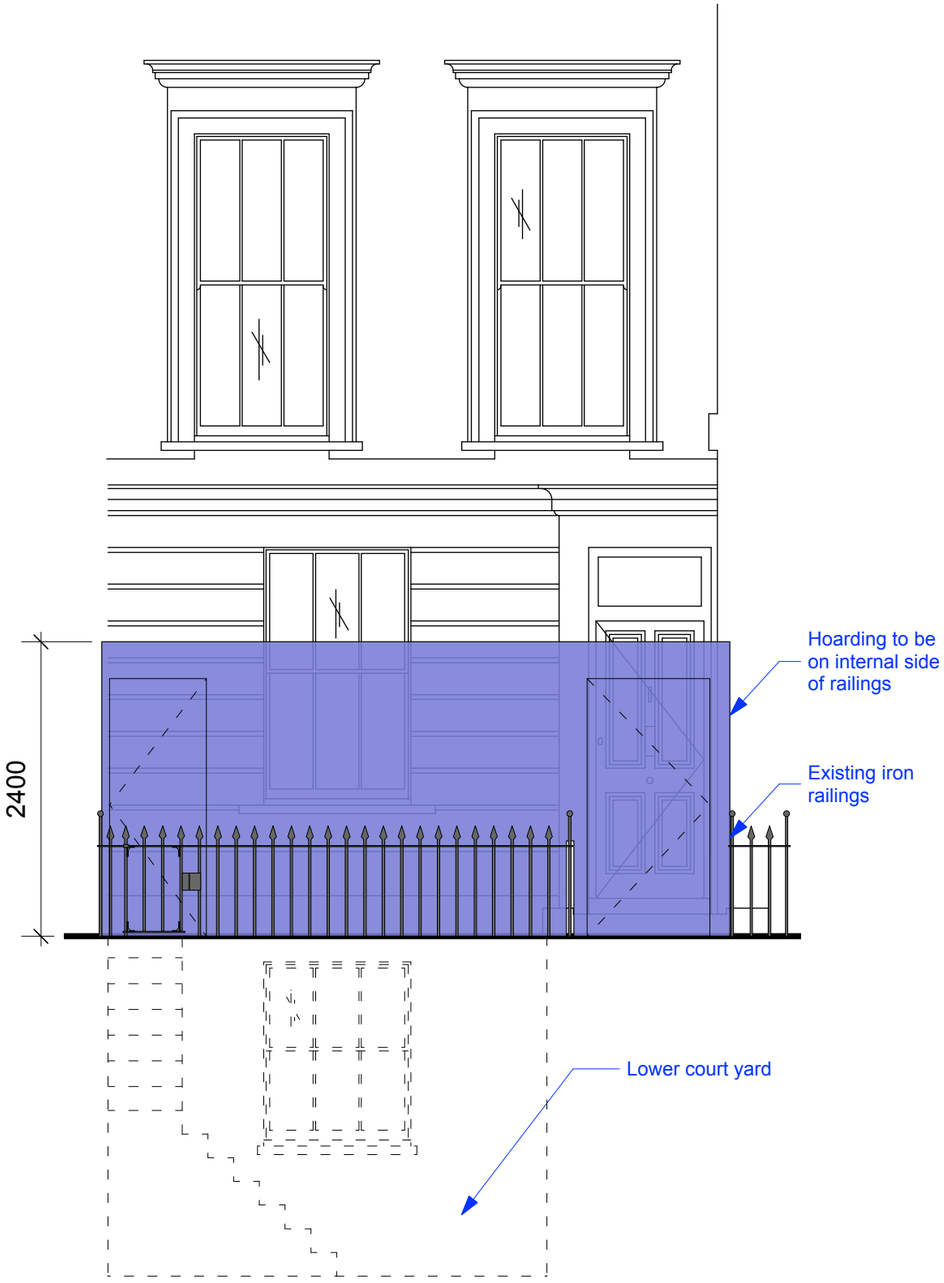
$M = 32.43 \times 0.154/4 \times 1/2 = 0.62$ kNm

$S_x = M/p_y = 0.62 \times 10^6 / 275 = 2254$ mm^3 $= bt^2/4$

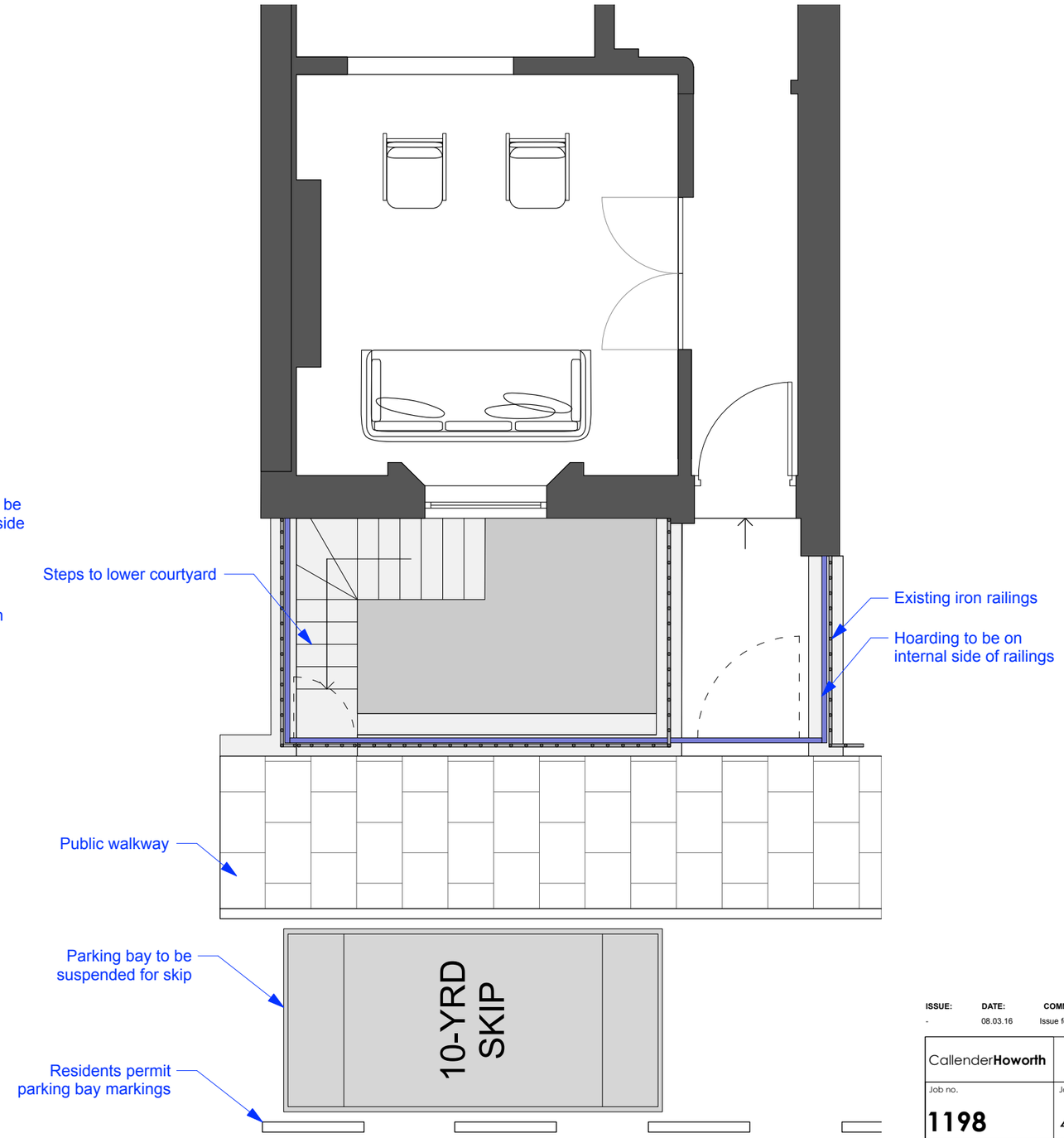
$b = 81$ mm $t = \sqrt{2254 \times 4 / 81} = 10.6$ mm

PROVIDE 15 mm THK. END PLATE WELDED TO BEAM USING 8mm FULL PROFILE FILLET WELDS.

1m 2m 3m 4m 5m



1 FRONT ELEVATION
Scale: 1:50



2 PLAN
Scale: 1:50

ISSUE:	DATE:	COMMENT:
-	08.03.16	Issue for Information

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Job no.	Job title		
1198	4 OVAL ROAD		
Drawing no.	Drawing title		
120	PROPOSED HOARDING		
Scale	Size	Drawn	Revision
1:50	A3	GM	-

MARCH 2, 2016

NOISE, VIBRATION & DUST MANAGEMENT PLAN

4 OVAL ROAD, LONDON NW1 7EB

SLS Builders Ltd

SLS Builders Ltd

44 Gorst Road, London NW10 6LD
Company No: 05629379

44 Gorst Road, London NW10 6LD
Company No: 05629379

1. Introduction

1.1. SLS Builders LTD have been instructed to produce a Noise, Dust and Vibration Management Plan for the proposed refurbishment works at 4 Oval Road, NW1 7EB

1.2. The purpose of NVDMP is to identify the level of risk of adverse noise, dust and vibration effects that may be caused by construction activities associated with the basement extension works and ensure that potential effects are appropriately controlled so that the project is delivered with minimal impact to the amenity of the local community

1.3. This document forms a record of the noise, vibration and dust mitigation and management which will be adopted during construction of the proposed works at 4 Oval Road, NW1 7EB

1.4. Details of the site and proposed development are described in the following section of this report. Site specific and generic control measures are listed in Section 3. A risk assessment of potential noise, dust and vibration risk effects in presented sections 4 and 6 respectively. Finally a summary of the aforementioned sections is presented in section 7

1.5. This report is has been prepared with reference to the following acts, guidelines and policies:

- BS5228: 2009 + A1:2014 – Code of Practice for Noise Vibration Control
- CCS – Code of Construction Practice
- Control Pollution act 1974 (COPA)
- Environmental Protection Act (1990)

SLS Builders Ltd

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2. Site Details and Outline Works Programme

2.1. Site Description

2.1.1. Oval Road No 4 is located in Residential/ Commercial area within the administrative boundaries of London Borough of Camden. The property is a Listed Building, terraced, Brick Built, Timber Framed and in a fair condition.

2.2. Proposed development

2.2.1. The proposal involves the complete refurbishment of the property including minor structural alterations at the Lower Rear Garden, demolitions, potential roof works TBC, additional framed glass conservatory and any other associated waterproofing/ drainage works if necessary.

2.3. Sensitive Receptors

2.3.1. The property is surrounded on all sides by sensitive receptors therefore particular care will be taken to preserve the amenity throughout planned works utilising the measures outlined in this report.

2.4. Construction Methodology

2.4.1. The development site will operate from 8: 00 to 17:00 weekdays and 8:00 to 13:00 hrs on Saturdays. In order to reduce any negative impact upon the amenity of the identified sensitive receptors during commonly habited times, activities that produce high levels of noise will be limited to 8.30am to 17.00pm on weekdays.

2.4.2. It is expected that the structural works will take approximately x8 weeks to complete.

SLS Builders Ltd

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Site Set up and Access

2.4.3. Upon commencement of the proposed development, works can be carried out to form the site compound and these works will include erection of a timber framed plywood hoarding at the front of the property. All requisite plant and materials for this and subsequent activities will be delivered to the frontage of 4 Oval Road and offloaded at kerbside. Following delivery the crew will transfer all materials manually to within the site compound.

2.4.4. All power tools to be used in this project will be electrically operated; No diesel compressor or generator should be used.

2.4.5. The site will be provided with temporary Electric Power Supply and Welfare Facilities required on site for Crew Members.

Site Finishes & Contingency

2.4.6. Following the completion of the structural phase and the demobilisation of the structural site crew the site finishes will take place and these works will include clearing all debris and tools inside and outside the property. It is expected this will take about 12 weeks excluding a contingency period for works overrun. The site screening and dust protection measures will remain in place for the duration of these works.

44 Gorst Road, London NW10 6LD
Company No: 05629379

3. NOISE DUST VIBRATION CONTROL MEASURES

3.1 Control Measures

3.1.1 The control measures detailed in this section have been developed in accordance with the proposed plans and drawings. Deviation from approved method statements will be permitted only with prior approval from the supervising engineer following a normal review.

3.2 Site Personnel

3.2.1 All operatives on site will be trained to ensure that noise minimisation and best practicable means (BPM) are implemented at all times. Works will be checked regularly by the Site Supervisor to ensure that BPM is being implemented throughout the program of works.

3.3 Noise, Dust and Vibration Control Measures

3.3.1 Noise, dust and vibration control measures include:

- suitability in the choice of methodology/technique for operations (including site layout) will be considered in order to eliminate or reduce emissions at sensitive locations;
- fixed items of construction plant will be electrically powered in preference to diesel or petrol driven;
- wherever practicable fabrication will be undertaken off site;
- noisy plant will be kept as far away as possible from sensitive areas;
- each item of plant used will comply with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701 [4] where reasonably available;
- equipment will be well maintained and will be used in the mode of operation that minimises noise;
- equipment will be shut down when not in use or throttled down to a minimum during waiting period;
- vehicles shall not wait or queue on the public highway with engines running (unless the engine is required to power the operation of the vehicle e.g. concrete wagon);
- all materials will be handled in a manner that minimises noise; and
- where possible deliveries will be arranged on a just-in-time basis in order to prevent vehicles queuing outside site

44 Gorst Road, London NW10 6LD
Company No: 05629379

3.4 Site Specific Noise and Vibration Control Measures

3.4.1 Control measures detailed below shall be implemented

- Plant which is considered to introduce the risk of potential noise effects to be limited to working between 08:00 – 16:30 hrs and not permitted on weekends;

- Breaker usage to be limited to only where absolutely necessary; where practicable concrete slabs to be cut, drilled and burst;

- All fixed plant is to be kept within the demise of No.4 Oval Road to reduce potential effects on neighbouring properties and is to be acoustically enclosed;

- A hoarding is to be installed around the site boundary to minimise noise emitted when loading;

- Where possible rebar (Reinforced steel) will be cut to the required lengths prior to site delivery to minimise any necessary site trimming;

- Hydraulic or pneumatic shears will be used in preference to angle grinders when trimming rebar where practicable;

- All HGV movements associated with the worksite will only take place during normal working hours, unless otherwise agreed and approved by LB Camden.

SLS Builders Ltd

44 Gorst Road, London NW10 6LD
Company No: 05629379

3.5. Site Specific Dust Control Measures

- dust generated by construction process will be suppressed via a fine directional spray jet of water aimed at the source;
- skips to be covered when not in use;
- cutting equipment to be used with water suppressant and/or suitable extract system;
- no burning of waste wood or other materials on site;
- the stockpiling of dust generating materials on site will be minimised;
- immediate clean -up of spillages of dusty materials in place;
- wet brushing techniques will be used for cleaning;
- regular checks for visual observation of dust and soiling within 50m of site;
- all mobile vehicles should comply with the standards of the Low Emission Zone;
- dust deposition and/or soiling monitoring during construction phase;
- no vehicle idling (unless required e.g. concrete wagon); and
- Use of mains or battery powered plant where practicable.

44 Gorst Road, London NW10 6LD
Company No: 05629379

4. NOISE RISK ASSESSMENT

4.1 Overview

4.1.1 This section presents an assessment of the risk of construction noise generated by the proposed works at No. 4 Oval Road and the associated potential adverse effects on the surrounding area.

4.1.2 An assessment of the potential noise effects has been undertaken based upon the plant and equipment, scheduled construction activities and the programme of works as presented in this document.

4.2 Baseline Conditions

4.2.1 Although no site specific baseline information is available for the site, initial observations indicate that the main noise sources in the locality of the proposed development are from local traffic and other neighbourhood developments. Baseline noise measurements will be obtained prior to the proposed construction to establish pre-existing ambient noise levels at the properties potentially affected by construction noise.

4.2.2 Taking into consideration the number of dwellings potentially affected, the programme of works, and the scale of development, a level of 75 dB is to be adopted to assess acceptability of this short term project.

4.3 Predicted Noise Risk

4.3.1 Predicted receptor noise risks been determined

4.3.2 Appropriate screening from buildings and other local barriers will be installed and maintained for the duration of the project, however, it is understood that barriers will not always screen noise sources from upper storeys as these may overlook the barriers. Worse case levels are presented.

44 Gorst Road, London NW10 6LD
Company No: 05629379

5. DUST RISK ASSESSMENT

5.1 Overview

5.1.1 The purpose of this assessment is to identify the level of risk of dust emission associated with the construction activities, and to propose a suitable mitigation strategy to ensure negative impacts are controlled.

5.2 Baseline Conditions

5.2.1 No baseline information is available for the site, however it is understood that the baseline airborne particulate dust environment will be influenced by road traffic and dust from other sources.

5.3 Site Evaluation

5.3.1 It is recognised that the level of risk attached to a construction site is dependent not only on the size and scale of a development, but also the activities, the timing of works (seasonality) and the sensitivity of the surrounding area. As the works are in the main confined to below ground activity and the relatively short duration of the proposed works the risk of dust nuisance is LOW.

5.3.2 Details of the worksite and the proposed scheme are presented in Section 2 of this document.

5.3.3 Sensitive dust receptors are those where the public may be exposed to dust from the worksite. Locations with high sensitivity to dust and within 100m of the proposed site include residential properties.

5.3.4 A list of sensitive receptors and the approximate distances to the worksite will be drawn up prior to the commencement of works. A plan showing the location of receptors in relation to the site is to be maintained at the site office for the duration of works.

5.3.5 The distance from source to sensitive receptor is a key factor for determining the potential dust effects from a construction site. As a general guide, the main effects are at distances of less than 100 m. The distances from source that dust effects are felt is dependent the extent and nature of mitigation measures, prevailing wind conditions and the presence of natural screening by, for example, vegetation or existing physical screening such as boundary walls and buildings.

5.3.6 There are some receptors of “high sensitivity” within 50 m of the worksite. No special ecological receptors are located near to the site and ecological air quality impacts are considered negligible.

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5.4 Dust Risk Assessment Summary

5.4.1 Generic dust mitigation has been discussed in Section 3 and will be followed during the works. The risk to ecological receptors is negligible, the risk of health effects is low risk and the risk of dust soiling is medium risk during construction activities involving concrete and low risk during other activities.

5.4.2 Mitigation and BPM is detailed in Section 3.5 and visual monitoring of dust will be maintained throughout the works.

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6. VIBRATION RISK MANAGEMENT

6.1 Overview

6.1.1 This section presents an assessment of the potential risk regarding vibration generated by the construction works detailed in this document, and the associated adverse effects on the surrounding area. The surrounding area is residential and it is unlikely that these residential buildings will contain sensitive equipment at risk of adverse vibration effects.

6.1.2 The risk assessment has been based on an appraisal of the plant listed in Table 1 of Appendix B, examining the likelihood of each item generating significant levels of vibration at receptors.

6.2 Guidance Vibration Limits

6.2.1 Vibration levels will be evaluated against guidance presented in BS 5228 Part 2 in order to assess the likelihood of both structural damage to neighbouring buildings and the human response of the occupants.

6.3 Vibration Control Plan

6.3.1 To control and minimise vibration effects caused by construction activity, the vibration mitigation measures listed in section 3 of this report will be adopted at all times.

6.3.2 At the commencement of any potentially disturbing phases of works such as breaking out that are likely to cause complaints it is recommended that attended vibration measurements should be undertaken to ensure receiver levels remain below appropriate thresholds and prior warning and explanation of the works is to be given to residents.

6.3.3 Works should be controlled on a risk based approach with attended monitoring used to judge the acceptability of the works, and safe working distances going forward.

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7. SUMMARY & CONCLUSIONS

7.1.1 A noise, dust and vibration management plan has been prepared on behalf of Callender Howorth to assess the risk associated with the construction of a refurbishment at No. 4 Oval Road

7.1.2 A construction methodology has been prepared in consultation with the site engineers and specific control measures have been presented for noise and vibration in Section 3.4 and dust in Section 3.5.

7.1.3 Due the enclosed nature of the site and the fact that the majority of the works are to be carried out below ground suggests that the risk of excessive disturbance cause by Noise is low. It is suggested that vibration monitoring be undertaken to ensure that threshold criteria presented in Section 6.2 is not exceeded at sensitive receptors.

7.1.4 The outcome of dust risk assessment presented in Section 5 shows the risk to ecological receptors is negligible, consequently the risk of health effects is low risk and the risk of dust soiling during construction activities involving is low risk.

7.1.5 With the control measures described in this NVDMP, the potential for significant noise, dust and vibration adverse effects will be minimised.

MARCH 11, 2016

CMP Appendix D
CONSTRUCTION TRAFFIC MANAGEMENT PLAN

4 OVAL ROAD, LONDON NW1 7EB

SLS Builders Ltd

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44 Gorst Road, London NW10 6LD
Company No: 05629379

1. Introduction and Site Description
2. Highways and Community Liaison
3. Procedure
4. Spoil removal

SLS Builders Ltd

44 Gorst Road, London NW10 6LD
Company No: 05629379

1. Introduction and Site Description

- This Document covers the steps that will be taken to reduce potential congestion outside of the property when there are deliveries to site and when the waste management company removes the spoil.

- The property is sited on Oval Road in a residential/ commercial area with two - way traffic

- The properties frontage is on the edge of the pedestrian walkway and residents parking bays are located on the main road (Oval Rd).

- Hoarding will be required at the front of the property (see CH's Site Set Up Plan in Appendix B of the CMP and one bay suspension will be necessary to allow a skip to be placed outside the property to receive waste

- Welfare facilities will be located within the boundary of the property

- The Proposed Demolition and construction works to refurbish the property are expected to take x20 weeks with licences and plans approved for the duration of the works.

- The works will be contained within the boundary of the property and no work involving service upgrades to the major Utilities are planned and as such disruption to public right of way will be kept to a minimum.

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2. Highways and Community Liaison

- Prior to commencement onsite the contractor will undertake to notify by letter all local residents within 100m of the site in either direction and on both sides of Oval Road. This letter will contain details of anticipated duration of the project, agreed working hours and contact details of Head Office, the Supervisory Staff and Health and Safety Officers.
- The Site Compound and Hoarding will also display the above information in addition to the standard typical information required by Local Authority
- No Service reconnections are planned so no disruption or abnormal use of highway is expected; Should this change them our administrative team will liaise with the Highways Enforcement Officer prior to the commencement of works
- Prior to licences and the parking bay suspension being applied for, the Contractor will arrange to meet on site with the local Highways Enforcement Officer to discuss proposal and ascertain any planned maintenance work.
- The site working hours will not exceed the Local Authority regulations and will be carried out between 8.00 am – 17.00 pm Mon- Fri and 8.00 am – 13.00 pm on Saturdays and no work will be carried out on Public Holidays or Sundays
- Safe pedestrian access will be maintained at all times and the public right of way will be regularly cleaned down and inspected of hazards with particular attention given to vulnerable users of public right of way
- Clear signage and good lighting for pedestrians will be in place during the works and site operatives will understanding instruction to maintain courteous relations and be helpful to neighbours and passers-by at all times
- If the Site requirements should change then a comprehensive review of this document will be carried out in consultation with Highways Enforcement Team and agreed alterations will be implemented as necessary. Should our works cause complaint these will be handled directly through our office. Contact details will be clearly displayed on the Site Hoarding and an ongoing process of community liaison will be maintained under the Considerate Contractors Scheme.

NB: At this point in time we are unaware of any developments that affect this plan however the Site Manager will be instructed to monitor local notifications of other works and advise the office accordingly.

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3. Procedure – Delivery of Materials and Plant

- Delivery drivers will park their vans outside the site prior to offloading materials directly into the property and will be required to notify the Site Manager at least 30 minutes before arrival.
- All large vehicles will be parked temporarily outside the property during deliveries. We will restrict all large vehicle deliveries/ collections/ muck away to between the hours of 10 am to 4 pm to minimise disruption.
- Delivery vehicles will pull up prior to being directed to offload area outside the property and traffic management will be employed if necessary.
- Our Staff will be made aware of refuse collection and care will be taken to avoid congestion when scheduling deliveries. Site traffic will be managed by Banksman with priority at all times for emergency vehicles
- All materials will be contained within our compound and ordered only when required
- Deliveries will be requested by site staff as follows:
    1. Materials ordered through Head Office at least 48 hours prior to their requirement on site. Site foreman will be instructed to ensure orders are to be kept to a minimum to avoid delays in offload and double handling after being stored in the compound.
    2. We use licenced contractors to dispose waste which will be required by site staff and scheduled by the Head Office Contracts Administrator a minimum of 24 hours prior to any loads being filled externally
    3. Concrete trucks and pumping plant will be arranged through Head Office if necessary at least 24 hours prior to pouring.
    4. Delivery drivers will be required to notify the site Manager at least 30 minutes prior to arrival
    5. No stacking of vehicles will be permitted at any time
- Materials and plant will be unloaded by driver and site staff, and temporary traffic management will be provided if deemed necessary by suitably qualified staff.
- Where possible we will typically use vehicles which contain pump up truck or tail lifts to enable materials to offload in a safer manner.
- We estimate that there will be at least x2 vehicles coming to site daily. This would typically include vans with periodical deliveries. The estimated dwell time for each vehicle when delivering will be 15-20 minutes, during which a staff member would be present with Hi- Visibility wear and PPE. The strict ordering procedures ensure no double drops or lap over with different contractors/ suppliers to site. A table showing expected vehicle traffic will be on site at all times to remind team members of each delivery expected.
- Traffic management will consist of temporary signage cones as required to sufficiently warn all passing traffic of our operations with safety being the primary concern. We will provide banksmen to direct traffic when required and we will position personnel on Oval Road as necessary and particular care will be taken to manage the safe passage of pedestrians.
- Under no circumstance will HGV traffic be allowed to execute 3 point turns. When HGV's are leaving they will be required to do so under supervision of our trained banksman before exiting the site towards Regents Park or Camden Town.
- No contractor vehicles will be allowed to use the suspended parking bay for any purpose other than stated above and vehicle parking will not be permitted.

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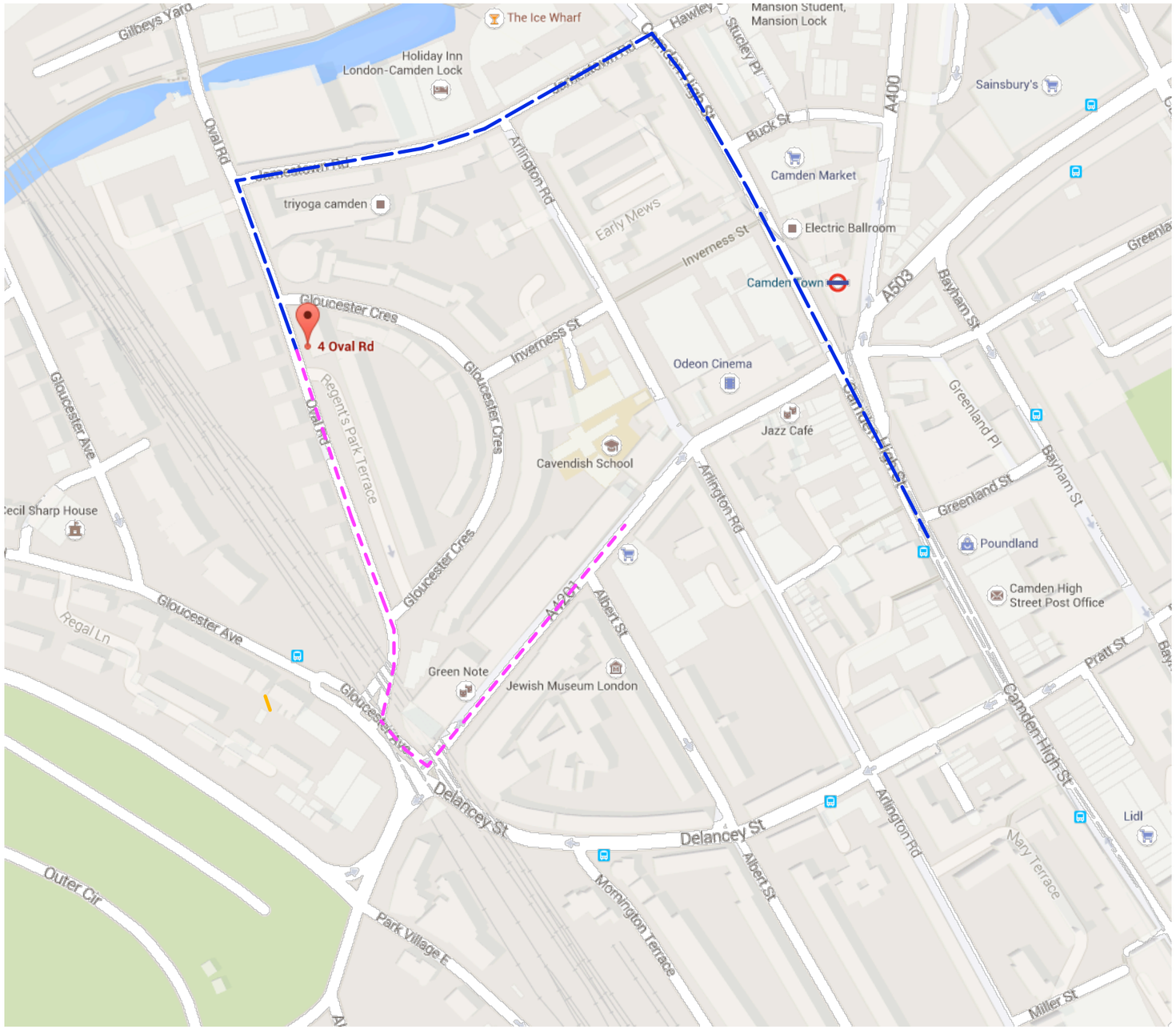
4. Waste Removal

- Rubbish will be primarily loaded onto rear Garden of the Building pathway within boundaries, should there be no skip outside the site.
- All rubbish will be moved to front of the building 30 minutes prior to rubbish truck arriving or disposed directly into the skip located on the suspended parking bay.
- Protection will be provided where any part of the access extends over to pedestrian walkway or main road.
- The truck will pull up beside curb where possible to enable minimal disruption to the passing traffic or pedestrians and our Banksmen will have to implement traffic control and pedestrian movements to ensure safety is never compromised.
- The truck will remain in position about 15-20minutes until fully loaded
- Whilst the rubbish is removed members of site staff will notify other drivers of the approximate duration of the operation.
- Should residents need to access or exit the area and our vehicles are in the way, every effort will be made by the banksmen and our staff to re- position these to enable vehicles to pass.
- The truck driver will be under strict instructions that they are to move immediately should any emergency vehicles get past
- Once the truck has left site, our staff will ensure the road is completely clear of debris following the waste collection.
- Periodically during the day and at the end of every working day the road will be thoroughly swept and washed down if necessary to ensure it is kept presentable and safe at all times.



1 CTMP LOCATION PLAN ROUTE

To Oval Road

Away from Oval Road

REV - ISSUE FOR PLANNING & LBC March 2014

CallenderHoworth	Morelands 5-23 Old Street London EC1V 9HL	T: 020 7336 8560 F: 020 7549 2152 W:www.callenderhoworth.com	
Job no. 1198	Job title 4 Oval ROad		
Drawing no. 121	Drawing title CTMP LOCATION PLAN ROUTE		
Scale NTS	Size A3	Drawn ML	Revision -

MARCH 11, 2016

CMP APPENDIX E
CONTRACTORS METHOD STATEMENT

4 OVAL ROAD, LONDON NW1 7EB

SLS BUILDERS LTD

SLS Builders Ltd

Index

This document to be read in conjunction with the documents in the following CMP Appendices:

1. General

The works described herein are of the Party Walls of No 4 Oval Road NW1 7EB.

The extent and scope of the foundations are shown in Appendix A – CWPM Design drawings 16022 -01 & 02

2. Hoarding for Access

Access to the working area will be from the side entrance to the lower ground floor, please see CH's Site Set Up Plan

On commencement, site operatives will carry out the following sequence of works;

Carefully protect existing railing, gates and fixtures.

Protect carefully ANY existing hedge and planting if necessary

Protect front access path with plywood boarding.

Erect 2.40m high site compound comprising plywood hoarding; 50mm x 100mm vertical standards @ 400mm centers; 50mm x 100mm top bearer; 100mm x 100mm sole bearer spiked to ground. Lockable door for access.

Protect lower ground floor windows and reveals if necessary within hoarding with plywood fixed to 50mm x 50mm perimeter bearer fixed to wall.

Construct plywood roof covering to hoarding supported on 50mm x 100mm bearers at 400mm centers.

Install night-lights and safety notices.

3. Temporary Works Procedure for Concrete Foundations

The foundations will be constructed in the sequence shown on the structural engineer's drawings or as agreed on site by the appointed Building Control Officer.

Our temporary works proposals for the support of clay soils are as follows:

Supporting existing timber floors above if sleeper walls have been removed:

> Position 100x100mm temporary timber beam/plates lightly packed to underside of joists either side of existing sleeper wall and support with vertical Acro props @ 750 centers. Remove sleeper walls and insert steel beam as a replacement. Beams to bear at masonry walls onto concrete pad stones (refer to Structural Engineer's details for pad stone & beam sizes) Dismantle props and remove timber plates.

4. Concrete Foundations and Removal of brickwork sections

This stage describes the construction of the concrete Foundations & Removal of brickwork sections at rear Lower Ground Floor Level

The following is to be read in conjunction with the Structural Engineer's details in respect of dimensions and all associated notes covered on their drawing.

The ground conditions will be checked by the building control inspector prior to installation of design reinforcement and concreting.
Temporary propping method will be used to ensure stability and security of load bearing walls on both sides. This will include inserting Horizontal needles inserted through holes cut in the wall just above the line of the lintel and are themselves supported at both ends by props and planks alongside walls about a meter difference and supported on Acro props.
Pour concrete foundation to the levels shown on the drawing.

5. Supervision and Inspecting Excavations

A competent person will supervise the installation, alteration and removal of excavation support.

People working in excavations will be given clear instructions on how to work safely. A competent person will inspect excavations:

- At the start of each shift before work begins;
- After any event likely to have affected the strength or stability of the excavation;
- After any accidental fall of masonry, earth or other material.

Plant Details

All hired plant bought on to site will be inspected prior to use. The Hire Company will submit evidence of last test and all statutory test certification.

Plant will be recorded on a 'Plant Register'
Mechanical Plant operation is to be carried out only by a nominated competent person (CITB or similar recognised approved body).

Technical Information

Please refer to attach CMP Appendix A - Structural Engineer's CMS & drawings and Architects drawings.

Deliveries and Site Access

All deliveries are to be coordinated by the Project Manager.

For safety a Banksman will be available to coordinate traffic to ensure safety during deliveries and departures from site.

No road closures are envisaged. We will require the suspension of one parking bay directly outside the property for the duration of the excavation. A large skip will be positioned on the suspended bay at the front of the property in order to facilitate the removal of waste and other materials from the construction works.

Consultation with Councils Transportation Team on the proposal will be carried out prior to works commencing.

Materials

Materials will be temporarily unloaded into the front parking bay then moved and stored in back garden.

All Materials will be as per specification from approved suppliers

Training

Training will be carried out through on-site inductions and tool box talks

6. Protection of Subject and Adjacent Listed Buildings

All staff will be briefed and detailed to ensure they recognize the importance of protecting heritage and listed building and adjacent buildings around.
When removing Existing Walls as per CWPM drawings, a Risk assessment will be produced and discussed with Building Control Manager to ensure correct procedures are followed to ensure procedures are followed and all necessary support and propping will be prepared before any works starts.
Clients will be requested to remove all ornaments, vases, photographs, furniture etc before work starts. All areas of floor and furniture (that cannot be moved) will be carefully protected with adequate non slip dust sheets and/or plastic or ply sheeting prior to work commencing; all protection will be inspected on a regular basis and renewed or replaced where necessary. A list of all preserved items deemed as original features has been drafted and pictures have been taken by client and designers to ensure these are kept in good order.

7. Control Measures

Site Rules

All operatives will be informed via a site induction / toolbox talk and expected to comply with the Contractor's site rules.

They will be informed of emergency procedures, assembly points, first aid and location of facilities.
Access to Work Area

Site personnel access will be through the hoarding to the front of the building.

The provision of a safe means of access to the work area is the responsibility of the Contractor / Client.

Control of Dust and Dirt Emissions

The use of water sprays to control dust levels will control potential dust pollution. The hoarding placed around the property will be designed to ensure the impact of dust is kept to a minimum. This operation will take place at all times during the process and when site vehicles and or plant are moving from site.

All waste will be removed from site by registered waste handlers and taken to a tip authorised and licensed to accept the waste type.

Welfare Facilities

Site accommodation and welfare facilities will be provided by the Contractor / Client throughout the duration of construction.

Personal Protective Equipment (PPE)

All operatives will wear appropriate personal protective equipment at all times issued to them. The Site Management and Contractor Foremen will take appropriate and immediate action of an employee does not use appropriate protective clothing.

PPE required as follows:

- Hard hat
- Safety boots
- Gloves
- High visibility jacket / clothing
- Ear defenders / plugs (when using breakers, working near compressor, etc)
- Goggles / visor (when using breakers in concrete)
- Dust mask / Respiratory protection, breathing
- Safety Harness (when in confined spaces)

Noise and Vibration

All woks will be completed in accordance with building control's environmental policy and the site NVDMP – see CMP Appendix C.
Electric hand tools will be used for all or the great majority of the work, significantly reducing noise and vibration compared with compressed air tools. Compressed air tools will only be used if electric tools are not sufficiently powerful to deal with the specific areas of work.

Power

110V electrical supply only will be allowed on the Project. This will be supplied via 110V step down transformer from the existing 240V supplies
Electrical leads and spider boxes will be inspected weekly. All portable tools will be visually inspected prior to use.
No unauthorised repairs will be permitted. Any defective equipment will be immediately withdrawn from service.

Fire

All works contractors will be fully acquainted with the site emergency procedures and will ensure their personnel comply with them in the event of an emergency.
Emergency Plans will be displayed in suitable locations on site and the site notice board.
A plan of site's fire escape routes and details of the local hospital will be displayed along with any statutory notices on the site notice board.

This information will also be conveyed to all operatives during the site induction.

Vermin

Vermin are not expected to be encountered, however if vermin are found then the Council's Pest Control services will be contacted so that an appropriate course of action can be taken

44 Gorst Road,
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4 Oval Road, London NW1 7EB

PROPOSED Project Team Hierarchy