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12 Park Village West

Construction Method Statement

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Ref: 140627/M Tulloch BEng MEng
Approved: C Boydell BSc CEng MIStructE MICE
Date: 27 May 2016
Rev No: 1.2

1.0 INTRODUCTION & BRIEF

1.1 The purpose of this report is to consider the construction and condition of the existing buildings on the site of 12 Park Village West and consider how the proposed basement structure can be constructed safely without compromising the structural integrity of the existing buildings or those adjacent to the site.

1.2 The report is based on planning drawings produced by Collett Zarzycki Architects and a visual inspection of the building.

1.3 This report has been prepared to outline the proposed construction method with outline calculations and the related structural drawings and sections.

2.0 SITE INFORMATION

2.1 12 Park Village West, Camden is an early Victorian detached 'villa' style property, designed by office of John Nash and comprises a three storey house in an Italian style with a octagonal tower toward the road built in 1834-37. The house is Grade II Listed. The construction, typical for buildings of this era, has load bearing masonry walls and timber floors. The proposed development is structurally isolated from the main property.

2.2 The house lies within the generally gentle sloped setting toward Regents Canal. Although the areas to either side of no 12 are relatively flat, the site is divided into two levels: the front house and garage levelled with Park Village West road, and a lower ground level toward the garden facing Regents Canal area, with an approximately 3m difference in level.

2.3 The three surrounding properties: No. 11, 13-14 and 204 Albany Street are a reasonable distance from the proposed works; therefore the adjacent properties' foundations are outside the 45 degree line of influence taken from the bottom of the excavation.

2.4 The proposed basement development will be situation under the existing coach house. The construction consists of load bearing masonry walls, timber floor and a timber roof. A visual inspection of the site has indicated movement to the rear flank wall. A reinforced concrete box, with walls cast under the existing structure will allow the existing structure to be stabilised while creating useable living space.

2.5 A Basement Impact Assessment – Screening and Scoping Report has been completed for the site and concludes that there are no negative impacts anticipated in this basement proposal on the hydro-geological and hydrological conditions of the local environment that cannot be suitably addressed in the detailed design of this proposal.

3.0 PROPOSED WORKS

3.1 In outline the main proposed structural works consist of:

- Supporting the existing structure in the temporary state to allow for excavations;
- Reducing the existing ground level under the coach house by approximately 4.0m in order to provide a new basement structure;
- The construction of new reinforced concrete "box" to form the basement.

3.2 A reinforced concrete retaining wall, which will be designed to act as simply supported, will provide the retaining structure. The basement slab will be designed for potential overburden pressures, resisted by self weight and the frictional resistance of the concrete "box" in the ground. The ground floor will consist of a reinforced concrete slab, supported on the retaining walls and acting as a prop to the top of the retaining wall.

3.3 Outline sketch proposals for the basement construction are shown in drawings S100, S101, S200 in Appendix A.

3.4 Outline structural calculations are included in Appendix B.

4.0 DESIGN & OUTLINE CONSTRUCTION METHOD STATEMENT

4.1 SSK001, in Appendix C, shows the stages of construction on a typical cross-section through the site as detailed in the method statement below. S099 shows the proposed temporary works required to support the existing structure during construction.

4.2 The retaining wall will be constructed in an underpinning type sequence to ensure the stability of the existing building is not compromised. The underpinning works should be carried out by a competent contractor, experienced with these types of operations and, preferably accredited with the Association of Specialist Underpinning Contractors (ASUC).

4.3 Phase 1 – Locally break out existing slab and install Pynford beams under loading bearing walls. Install temporary piles to support Pynford beams. Demolition of the existing ground bearing slab once all temporary works are installed.

4.4 Phase 2 - The first stage of underpinning is to be carried out in traditional 1.0m wide sections to minimise the risk of damage to the existing walls. The depth of the underpinning sections will be over 1.5m so temporary shoring should be used to ensure the stability of the excavations are maintained during the formation of the pins particularly where increased depths of made ground are encountered.

4.5 Each section of underpinning is to be tied to the adjacent section using either pre-fixed or post-fixed dowels and surfaces prepared to provide a shear key between each section. Hydrophilic water stops are to be applied to each joint before pouring of new sections to ensure water tightness is achieved.

4.6 Horizontal propping is to be installed before the ground level is fully reduced to the level required to undertake the second stage of underpinning.

4.7 Phase 3 - The second stage of underpinning should be carried out in 1.0m bays similar to the first stage. Vertical bars from the first stage of underpinning should lap with reinforcement in the second stage pins in order to provide full continuity. As with the vertical joints hydrophilic are to be installed to the horizontal surface to prevent water ingress through the joints.

4.8 Horizontal propping is to be installed to the second stage pins in order to allow excavation to the base slab formation level.

4.9 Phase 4 – Construction of basement slab. Reinforcement from the lower underpinning sections is to be fully continuous with that present in the base slab which can be achieved using mechanical couplers.

4.10 Phase 5 – Construction of ground floor slab. Temporary propping can be removed once ground floor slab is fully cast and cured. Temporary piles to be broken down.

5.0 SUMMARY

The proposed development of 12 Park Village West is to construct a single storey basement under the existing coach house. The development allows for the stabilisation of the existing building, which is suffering from significant movement, while creating a useable living space.

The construction sequence indicated within this document allows for the basement to be constructed in a manner that is safe and economic considering the scale of the building.

The works to 12 Park Village West, although complicated, should not be unfamiliar to a competent and experienced groundwork contractor and are relatively modest.

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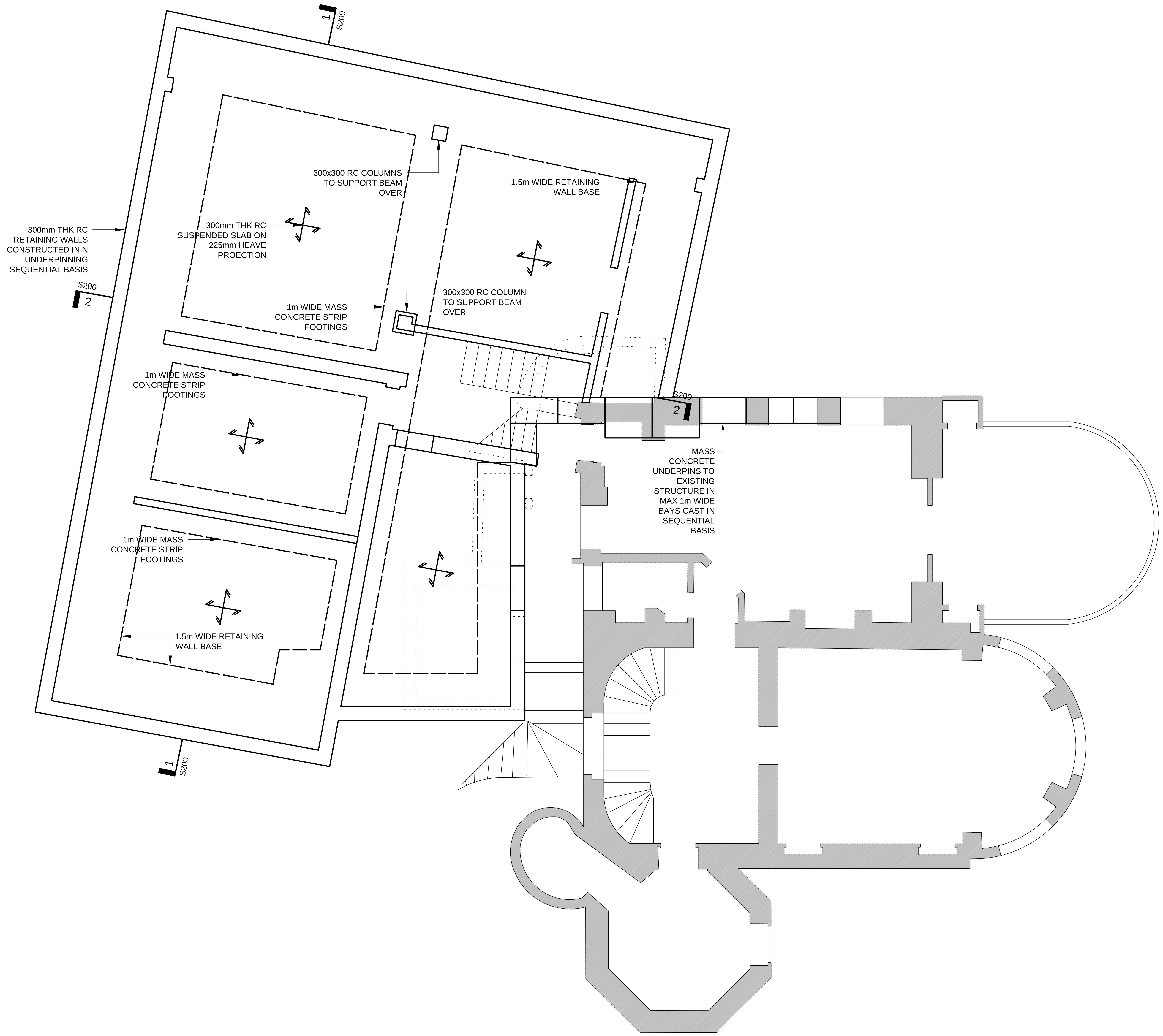
Appendix A – Structural Drawings and Sections

NOTES

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, DRAINAGE AND SPECIALIST DRAWINGS AND SPECIFICATIONS.
2. THE CONTRACTOR IS TO ASCERTAIN THE LOCATION OF EXISTING SERVICES PRIOR TO COMMENCING WORKS.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF ALL TEMPORARY WORKS AND SHALL SEQUENCE THE WORKS SUCH THAT THE BUILDING REMAINS STABLE AT ALL TIMES.



NOT FOR CONSTRUCTION

Rev	Date	Description	Drawn	Check
P2	27.05.16	ISSUED FOR INFORMATION	MT	CB
P1	14.08.15	ISSUED FOR INFORMATION	MT	CB

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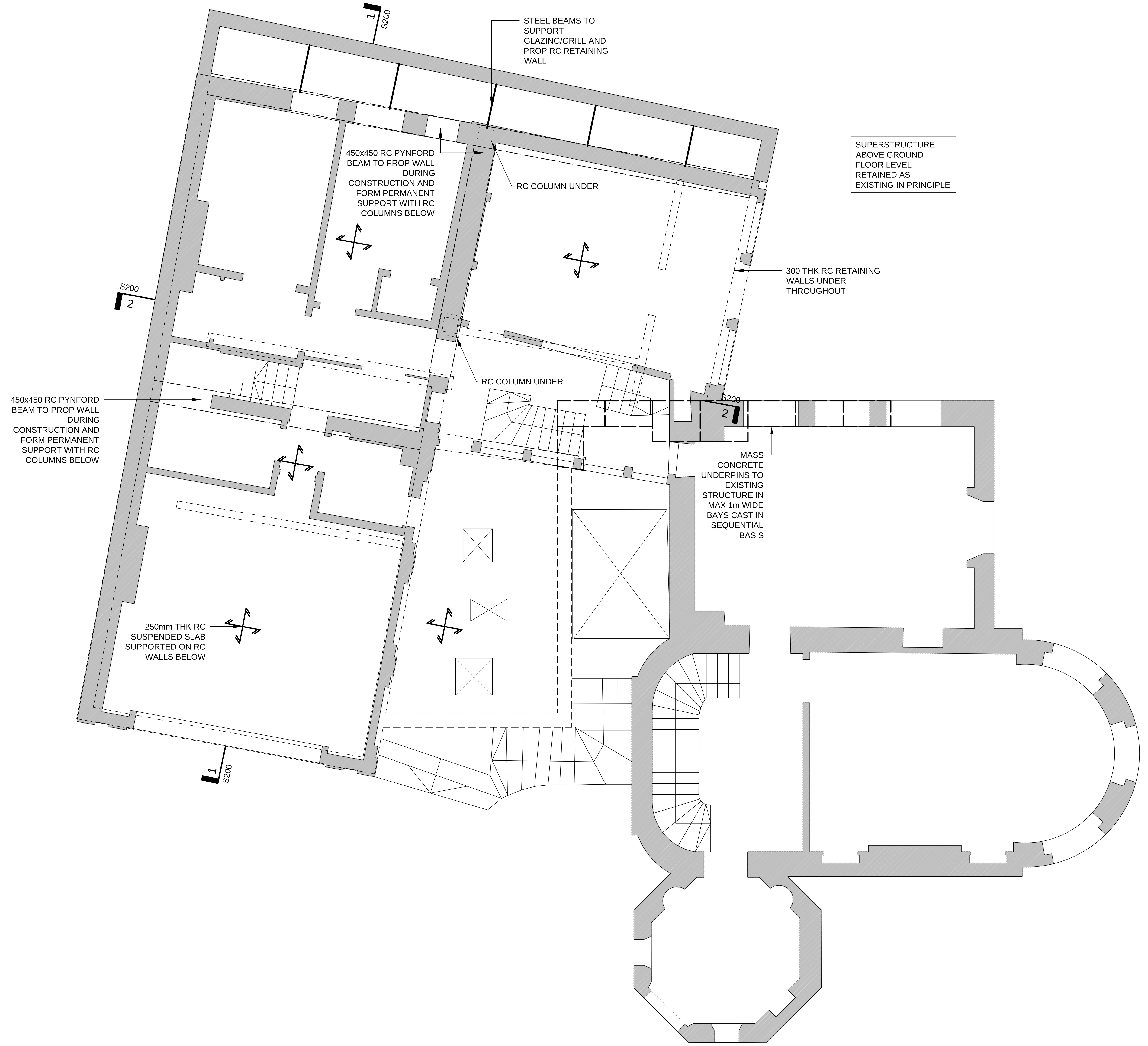
Drawing Status	PLANNING
Project	12 PARK VILLAGE WEST LONDON
Title	BASEMENT PLAN
Date	AUG 15
Scale	1:50@A1
Drawn	MT
Engineer	MT
Project No	140627
Drawing No	S100
Revision	P2

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL OTHER RELEVANT DRAWINGS. DO NOT SCALE FROM THIS DRAWING.



NOTES

GENERAL NOTES:

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2. THE CONTRACTOR IS TO ASCERTAIN THE LOCATION OF EXISTING SERVICES PRIOR TO COMMENCING WORKS.
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Drawing Status: PLANNING

Date: AUG 15

Scale: 1:50@A1

Project: 12 PARK VILLAGE WEST LONDON

Drawn: MT

Engineer: MT

Project No: **140627**

Title: GROUND FLOOR PLAN

Drawing No: **S101**

Revision: **P2**

NOTES

GENERAL NOTES:

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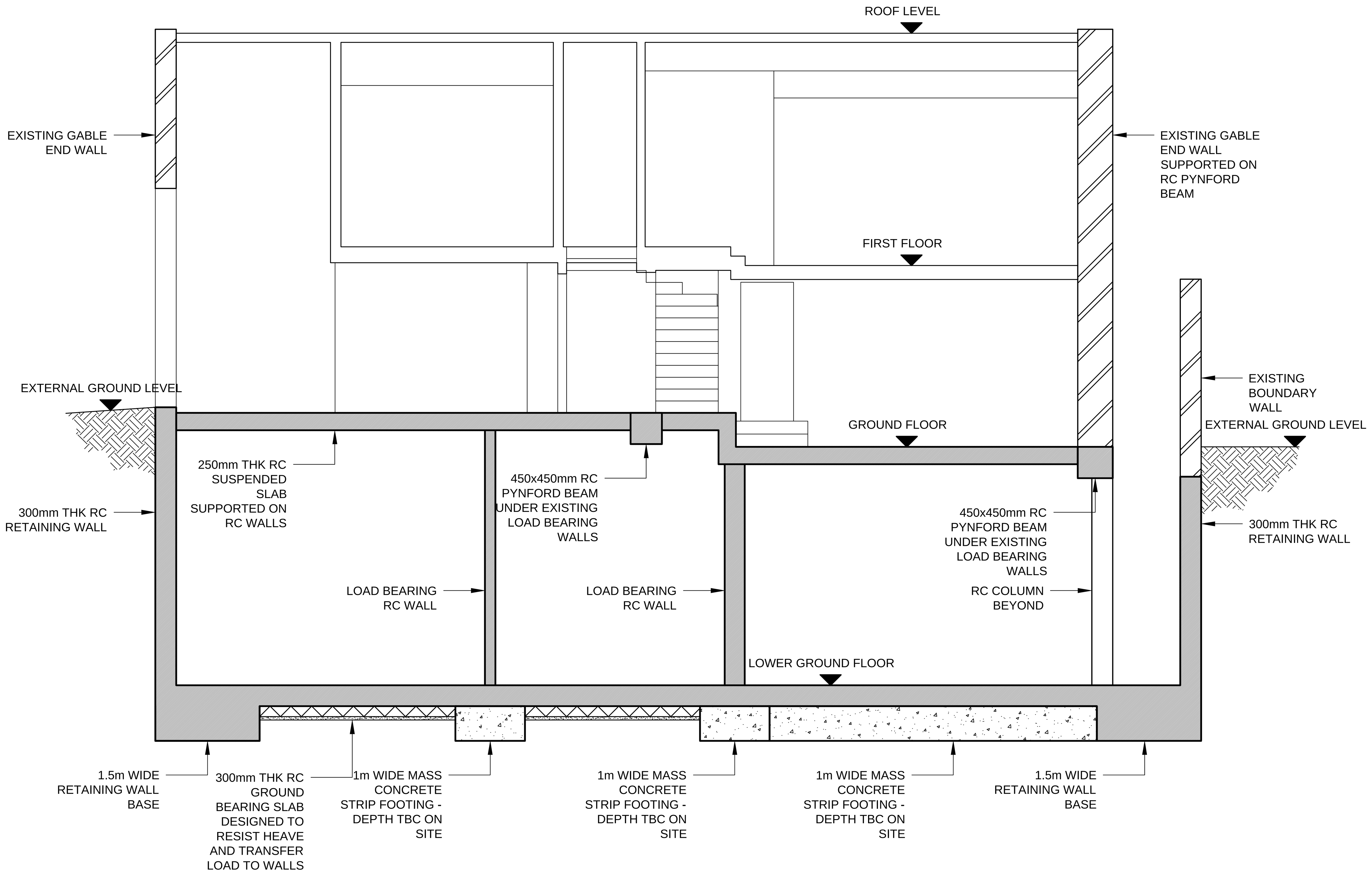
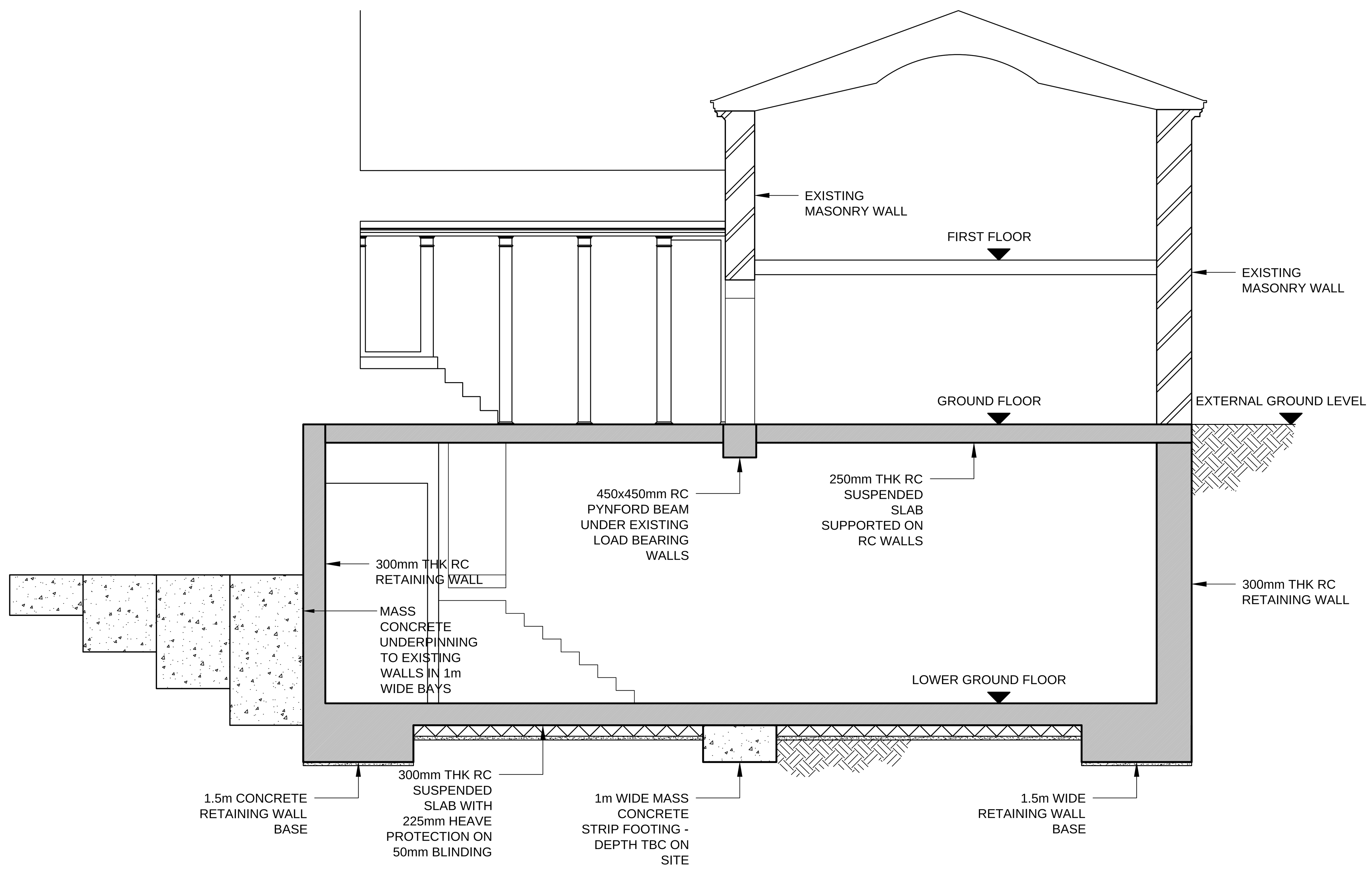


SECTION 1-1

SCALE 1:50



SECTION 2-2

SCALE 1:50

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Rev	Date	Description	Drawn	Check
P2	27.05.16	ISSUED FOR INFORMATION	MT	CB
P1	14.08.15	ISSUED FOR INFORMATION	MT	CB

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Drawing Status: PLANNING

Project: 12 PARK VILLAGE WEST LONDON

Title: SECTION 1-1 & 2-2

Date: AUG 15
Scale: 1:50@A1
Drawn: MT
Engineer: MT
Project No: **140627**
Drawing No: **S200**
Revision: **P2**

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Appendix B – Outline Structural Calculations

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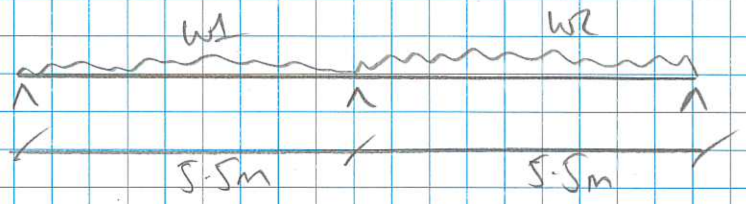
project	job no.
12 PARK VILLAGE WEST	140627
title	sheet no.
PYNFORD BEAM DESIGN	
	date
	engineer
	checked

rev.	date	



loading

w1:
dead
wall s/w = 6m × 0.33m × 20 kN/m³ = 39.6 kN/m
ground floor: 2.5m × 24 kN/m³ × 0.25m = 15 kN/m
first floor: 1m × 1 kN/m² = 1 kN/m
roof 2m × 1 kN/m² = 2 kN/m
beam S/W = 0.45 × 0.45 × 24 kN/m³ = 4.86 kN/m
62.46 kN/m

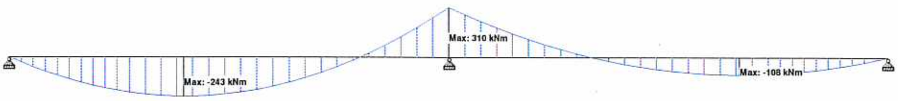
live
floors 2.5m × 2.0 kN/m² = 5 kN/m
1m × 2.0 kN/m² = 2 kN/m
roof 2m × 0.75 kN/m² = 1.5 kN/m
8.5 kN/m

w1 = 101 kN/m.

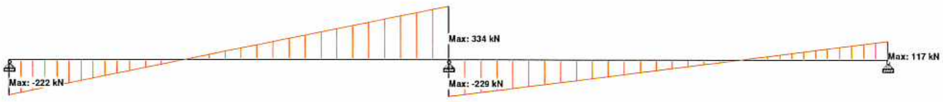
w2:
dead
wall s/w = 3m × 0.33m × 20 kN/m³ = 19.8 kN/m
ground floor: 2m × 24 kN/m³ × 0.25m = 12 kN/m
roof : 2m × 1 kN/m² = 2 kN/m
beam s/w = 0.45 × 0.45 × 24 kN/m³ = 4.86 kN/m
38.66 kN/m

live
floor : 2m × 2.0 kN/m² = 4 kN/m
roof : 2m × 0.75 kN/m² = 1.5 kN/m
5.5 kN/m

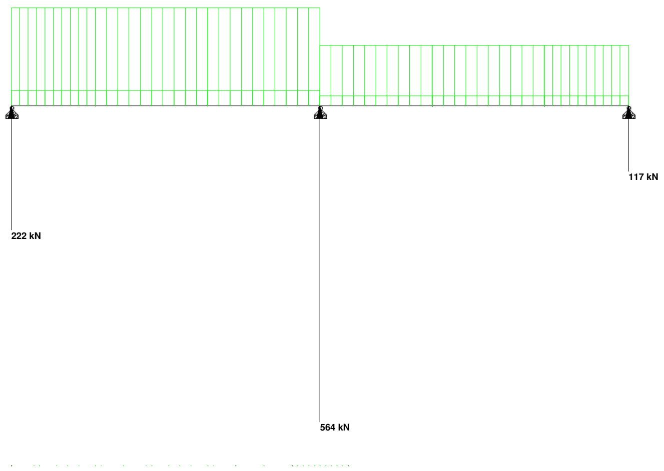
w2 = 62.9 kN/m



FACTORED BENDING MOMENT



FACTORED SHEAR FORCE



BEAM REACTIONS

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Page No.		Revision	
Engineer	MT	Date	
Checked		Date	
Job No.	140627	Job Title	12 Park Village West
Subject	Pynford Beam		

Reinforced Concrete Beam Design

Beam Reference — **RC Beam**

Forces				**Beam Dimensions**		
Maximum Moment	M =	**310**	kNm	Depth	**450**	mm
Maximum Shear Force	V =	**334**	kN	Width	**450**	mm
				Tens. reinft cover	35	mm
Material Properties				Comp. reinft cover	35	mm
Char. Strength tension reinft	f_y =	500	N/mm^2	Span	**5.5**	m
Char. Strength links	f_{yv} =	500	N/mm^2			
Concrete strength	f_{cu} =	**40**	N/mm^2			

Compression and Tension Reinforcement				
Effective Depth to tension reinft	d =	392.5	mm	
Effective depth to compression reinft	d' =	57.5	mm	
	k =	0.112		
Lever arm	z =	335.5	mm	
	x =	126.8	mm	
Reduced char strength		Not required	N/mm^2	For compression reinforcement only

Tension Reinforcement								
Tension reinforcement required	A_s =	**1946**	mm^2					
Tension reinforcement provided	$A_{s\,prov}$ =	**2454**	mm^2	**Provide**	**5**	**H**	**25**	**s**
				Tension reinforcement ok				
Compression reinforcement								
Compression reinforcement required	A_s' =	**0**	mm^2					
Compression reinforcement provided	$A_s'_{prov}$ =	**2454**	mm^2	**Provide**	**5**	**H**	**25**	**s**
				Compression reinft ok				
Shear reinforcement								
Design shear stress	v =	1.89	N/mm^2					
Concrete shear stress	v_c =	0.83	N/mm^2					
Shear reinforcement	A_{sv} =	252	mm^2	**Provide**	**2**	**H**	**10**	**links**
Area of shear links	$A_{sv\,prov}$ =	314	mm^2		**at**	**250**	**centres**	
				Shear links ok				
Deflection								
Basic span/effective depth ratio		**20**						
Design service stress	f_s =	264	N/mm^2					
Modification factor (tension reinft)		0.88						
Modification Factor (compression reinft)		1.32						
Modified span/effective depth ratio		**23.2**						
Actual span/effective depth ratio		**14.0**		***Span/effective depth ratio ok***				

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project	job no.
12 PARK VILLAGE WEST	140627.
title	sheet no.
GROUND FLOOR SLAB.	date / engineer / checked

rev.	date	

span 5.5m

loading

dead
s/w : 24kN/m³ × 1m × 0.25 m = 6kN/m
finishes : 1kN/m² × 1m = 1kN/m.
live : 2.0kN/m² × 1m = 2kN/m

w = 13kN/m.

wall @ midspan

dead : 0.1m × 2m × 20kN/m³ × 1m = 4kN
floor : 2.8m × 1kN/m² × 1m = 2.8kN
live 2.8m × 2kN/m² × 1m = 5.6kN

P = 18.5 kN.

Moment : $M = wl^2/8 + PL/4 = 49.16 + 25.44 = 74.6$ kNm.
Shear : $V = wl/2 + P/2 = 35.75 + 9.25 = 45$ kN.

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project: **12 Park Village West London**

job no. **140627**

sheet no.

title: **Ground Floor Slab**

date

engineer

checked

rev | date

Material Properties

Concrete Self Weight =	24 kN/m^3
Concrete Grade, f_{cu} =	40 N/mm^2
Reinforcement Strength, f_y =	500 N/mm^2

Slab Properties

Span =	5.5 m
Overall Depth, h =	250 mm
Bar Diameter =	16 mm
Link diameter =	0 mm
Cover =	30 mm
Effective depth, d =	**212** mm
Design Moment, M =	**75** kNm
Ultimate Moment, M_u =	**280** kNm

M < Mu therefore section adequate

Reinforcement

k =	0.0415 ***< 0.156 No compression steel required***
z =	0.9500 d ≤ 0.95d
$A_{s\ reqd}$ =	852 mm^2/m
$A_{s\ min}$ =	325
Therefore provide	**16** s @ **200** mm spacing
$A_{s\ prov}$ =	**1005** mm^2/m **> As reqd, reinforcement is adequate**
Steel content =	0.40% > 0.13 and < 4 %
$A_{s'\ prov}$ =	393 mm^2/m

Deflection Check

basic l/d =	20 *(Simply supported)*
M / bd^2 =	1.660
Design Service Stress, f_s =	264.93 N/mm^2
Modification factor (t) =	1.24 ≤ 2
Modification factor (c) =	1.06 ≤ 1.5
Allowable l / d =	26.25
Actual l/d =	25.94 **OK**

Shear Check

V =	45 kN
Design Shear Stress, v =	0.212 N/mm^2 ***< 5N/mm2 therefore beam size adequate***
$100A_s / b_v d$ =	0.474
Design Concrete Shear Stress,	0.576 N/mm^2

v < vc therefore shear links are not required

Project	12 PARK VILLAGE WEST		
Client		Made by	Date	Page
Location	Basement Column	Checked	Revision	Job No

The Concrete Centre™

SYMMETRICALLY REINFORCED RECTANGULAR COLUMN DESIGN, BENT ABOUT TWO AXES TO BS 8110:2005

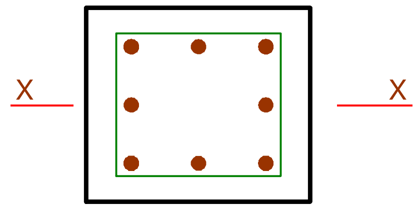
Originated from **RCC53.xls** v3.2 on CD © 2006 TCC

MATERIALS

fcu	40	N/mm²	γm, steel	1.15	Cover to link	30	mm
fy	500	N/mm²	γm, conc	1.5	h agg	20	mm
steel class	A						

SECTION

h	300	mm	
b	300	mm	
with	3	bars per 300 face	
and	3	bars per 300 face	



RESTRAINTS

	Lo (mm)	Top Condition	Btm Condition	Braced ?	ß	Le (mm)	Slenderness	Status
X-AXIS	3800	3	3	Y	1	3800	Lex/h = 12.67	Column is
Y-AXIS	3800	3	3	Y	1	3800	Ley/b = 12.67	SHORT

LOADCASES

	AXIAL N (kN)	TOP MOMENTS (kNm) M ix	TOP MOMENTS (kNm) M iy	BTM MOMENTS (kNm) M ix	BTM MOMENTS (kNm) M iy
B1	564	0.0	0.0	0.0	0.0
				0.0	0.0
				0.0	0.0
				0.0	0.0
				0.0	0.0
				0.0	0.0

BAR ARRANGEMENTS

Bar Ø	Asc %	Link Ø	BAR CENTRES (mm) 300 Face	BAR CENTRES (mm) 300 Face	Nuz (kN)	Checks
H 40	11.17	10	90	90	0	Asc > 6 % (3.12.6.2)
H 32	7.15	8	96	96	0	Asc > 6 % (3.12.6.2)
H 25	4.36	8	100	100	3245	ok
H 20	2.79	6	104	104	2656	ok
H 16	1.79	6	106	106	2279	ok
H 12	1.01	6	108	108	1985	ok

DESIGN MOMENTS (kN

	K	X AXIS M add	X AXIS Mx	Y AXIS M add	Y AXIS My	COMBINED Axis	COMBINED M '	REBAR	max V *
B1	0.000	0.0	8.5	0.0	0.0	X	8.5	8 H12	48.4
0									#DIV/0!
0									#DIV/0!
0									#DIV/0!
0									#DIV/0!
0									#DIV/0!

SEE CHARTS ON NEXT SHEET

Project	12 PARK VILLAGE WEST	0		
Client	0	Made by 0	Date 00-Jan-00	Page
Location	Basement Column			
	SYMMETRICALLY REINFORCED RECTANGULAR COLUMN DESIGN, BENT ABOUT TWO AXES TO BS 8110:2005	Checked	Revision	Job No
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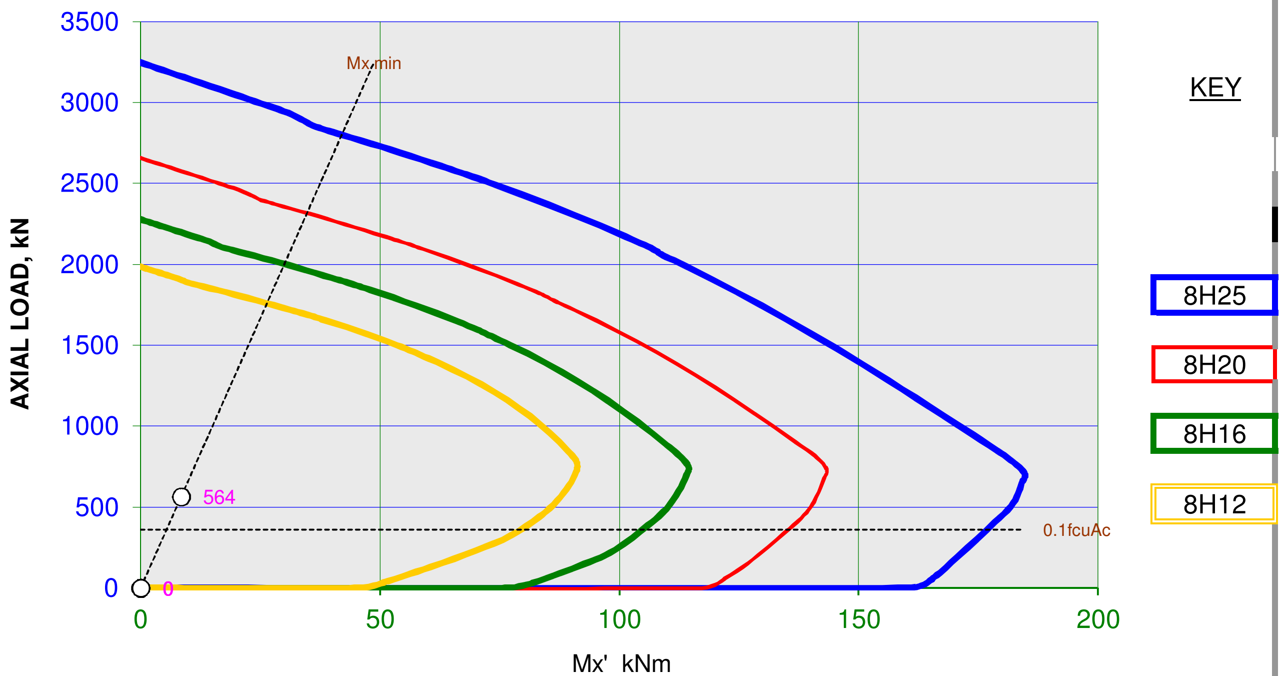
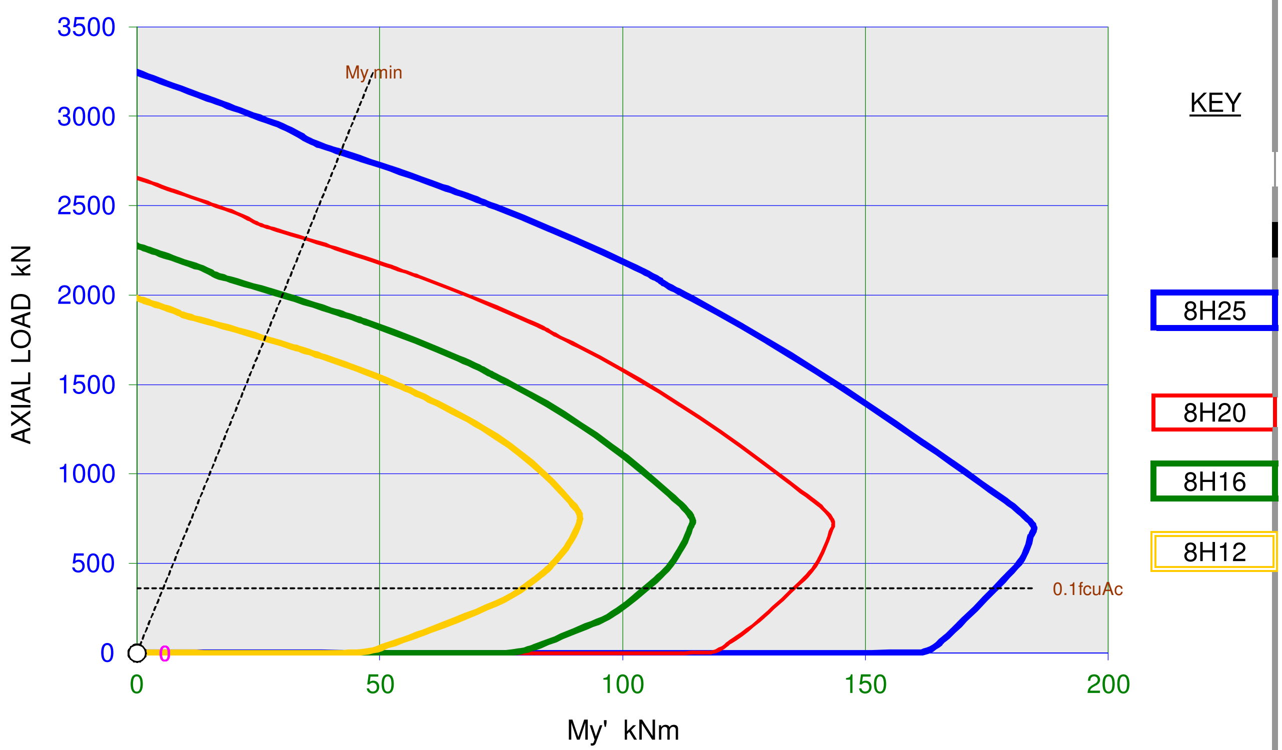
N:M interaction chart: Mx' critical

300 x 300 column (h x b), grade C40, 30 mm cover



N:M interaction chart: My' critical

300 x 300 column (h x b), moment about yy axis), Grade C40, 30 Cover



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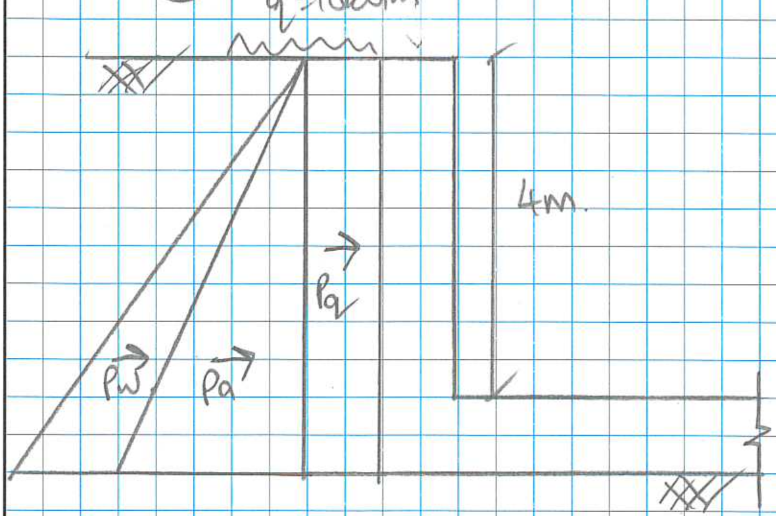

$\gamma = 19.5$ kN/m³

$\phi = 23°$

ka = 0.44
kp = 2.28.

Soil.	Depth (m)	pressure (kN/m²)
Clay.	0	10 × 0.44 = 4.4
	4	4.4 + (4 × 19.5 × 0.44) + (4 × 10 × 0.44) = 56.32

2 conditions.

Propped Top & bottom (wall to be propped during construction)

Mmax = 86.7 kNm
Vmax = 109 kN.

Propped cantilever.

Mmax = 89.9 kNm
Vmax = 132 kN.

Material Properties

Concrete Self Weight = 24 kN/m^3
Concrete Grade, f_{cu} = 40 N/mm^2
Reinforcement Strength, f_y = 500 N/mm^2

Slab Properties

Span = 4 m

Overall Depth, h = 300 mm
Bar Diameter = 16 mm
Link diameter = 0 mm
Cover = 30 mm
Effective depth, d = **262** mm

Design Moment, M = **87** kNm
Ultimate Moment, M_u = **428** kNm
M < Mu therefore section adequate

Reinforcement

k = 0.0316 ***< 0.156 No compression steel required***
z = 0.9500 d ≤ 0.95d
$A_{s\ reqd}$ = 801 mm^2/m
$A_{s\ min}$ = 390
Therefore provide **16** s @ **200** mm spacing
$A_{s\ prov}$ = **1005** mm^2/m **> As reqd, reinforcement is adequate**
Steel content = 0.34% > 0.13 and < 4 %
$A_{s'\ prov}$ = 1005 mm^2/m

Deflection Check

basic l/d = 20 *(Simply supported)*
M / bd^2 = 1.263
Design Service Stress, f_s = 249.07 N/mm^2
Modification factor (t) = 1.43 ≤ 2
Modification factor (c) = 1.11 ≤ 1.5
Allowable l / d = 31.80
Actual l/d = 15.27 **OK**

Shear Check

V = 109 kN
Design Shear Stress, v = 0.416 N/mm^2 ***< 5N/mm2 therefore beam size adequate***
$100A_s / b_v d$ = 0.384
Design Concrete Shear Stress, 0.537 N/mm^2
v < vc therefore shear links are not required

Material Properties

Concrete Self Weight =	24 kN/m^3
Concrete Grade, f_{cu} =	40 N/mm^2
Reinforcement Strength, f_y =	500 N/mm^2

Slab Properties

Span =	4 m
Overall Depth, h =	300 mm
Bar Diameter =	16 mm
Link diameter =	0 mm
Cover =	35 mm
Effective depth, d =	**257** mm
Design Moment, M =	**90** kNm
Ultimate Moment, M_u =	**412** kNm

M < Mu therefore section adequate

Reinforcement

k =	0.0340 **< *0.156 No compression steel required***
z =	0.9500 d ≤ 0.95d
$A_{s\ reqd}$ =	847 mm^2/m
$A_{s\ min}$ =	390
Therefore provide	**16** s @ **100** mm spacing
$A_{s\ prov}$ =	**2010** mm^2/m **> As reqd, reinforcement is adequate**
Steel content =	0.67% > 0.13 and < 4 %
$A_{s'\ prov}$ =	1005 mm^2/m

Deflection Check

basic l/d =	20 *(Simply supported)*
M / bd^2 =	1.361
Design Service Stress, f_s =	131.69 N/mm^2
Modification factor (t) =	1.82 ≤ 2
Modification factor (c) =	1.12 ≤ 1.5
Allowable l / d =	40.66
Actual l/d =	15.56 **OK**

Shear Check

V =	132 kN
Design Shear Stress, v =	0.514 N/mm^2 ***< 5N/mm2 therefore beam size adequate***
$100A_s / b_v d$ =	0.782
Design Concrete Shear Stress,	0.681 N/mm^2

v < vc therefore shear links are not required

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project	job no.
12 PARK VILLAGE WEST	140627.
title	sheet no.
BASEMENT SLAB	
	date
	engineer
	checked

rev.	date	

Basement Slab.

loading.

dead: 0.3m × 24kN/m³ = 7.2kN/m²
finishes: = 1.0kN/m²

live. 2.0kN/m²

uplift:
heave: 225mm Cellcore HX?/13 = 13kN/m²
water. 3m × 10kN/m² = 30kN/m²

W downward = 14.68 kN/m²
W upward = 35.8 kN/m²

Project	12 Park Village Wesr		
Client		Made by	Date	Page
Location	Basement Slab	F to G: 1 to 2	
	2-WAY SPANNING INSITU CONCRETE SLABS to BS 8110:2005 (Table 3.14)	Checked	Revision	Job No

The Concrete Centre

Originated from RCC94.xls v3.1

STATUS VALID DESIGN

DIMENSIONS

short span, lx	m	4.10
long span, ly	m	4.70
h	mm	300
Top cover	mm	30
Btm cover	mm	40

MATERIALS

fcu N/mm² 35 — γc = 1.50

fy N/mm² 500 — γs = 1.15

steel class A

Density kN/m³ 24

(Normal weight concrete)

LOADING *characteristic*

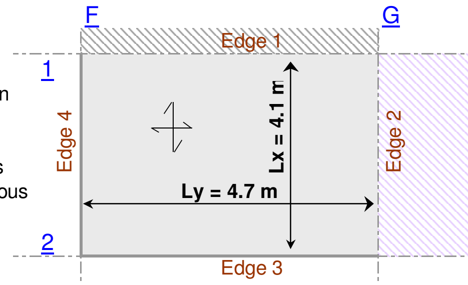
Self weight	kN/m²	7.20		
Extra dead	kN/m²	1.00		
Total Dead, gk	kN/m²	8.20	γf=	1.40
Imposed, qk	kN/m²	2.00	γf=	1.60
Design load, n	kN/m²	14.68		

EDGE CONDITIONS

Edge 1	C	C = Continuous
Edge 2	C	D = Discontinuous
Edge 3	D	
Edge 4	d	

See Figure 3.8 and clauses 3.5.3.5-6

Plan



MAIN STEEL		SHORT SPAN x	LONG SPAN y	EDGE 1 Continuous	EDGE 2 Continuous	EDGE 3 Free	EDGE 4 Free	BS8110 Reference
ßs		0.044	0.034	0.059	0.045	0.000	0.000	Table 3.14
M	kNm/m	10.9	8.4	14.6	11.2	0.0	0.0	
d	mm	254.0	242.0	264.0	252.0	264.0	252.0	
k'		0.156	0.156	0.156	0.156	0.156	0.156	
k		0.005	0.004	0.006	0.005	0.000	0.000	
Z	mm	241.3	229.9	250.8	239.4	250.8	239.4	3.4.4.4
As req	mm²/m	104	84	134	107	0	0	
As min	mm²/m	390	390	390	390	390	390	Table 3.25
As deflection	mm²/m	104	84	~	~	~	~	
Ø	mm	12	12	12	12	12	12	
Layer		B 1	B 2	T 1	T 2	T 1	T 2	
@	mm	275	275	275	275	275	275	
As prov	mm²/m	411	411	411	411	411	411	
=	%	0.162	0.170	0.156	0.163	0.156	0.163	%
S max	mm	762	738	762	762	762	762	Clause
Subclause		(a)	(a)	(a)	(a)	(a)	(a)	3.12.11.2.7
DEFLECTION								
fs		85	68	108	87	0	0	Eqn 8
Mod factor		2.000						Eqn 7
Perm L/d		52.00	Actual L/d	16.14	*Asx enhanced 0.0% for deflection control*			Table 3.10

TORSION STEEL

		BOTH EDGES DISCONTINUOUS X	BOTH EDGES DISCONTINUOUS Y	ONE EDGE DISCONTINUOUS X	ONE EDGE DISCONTINUOUS Y	
Ø mm	10					
As req	mm²/m	390		390		3.5.3.5
As prov T	mm²/m	411	411	411	411	
Additional As T req	mm²	0	0	0	0	
As prov B	mm²/m	411	411	411	411	

Bottom steel not curtailed in edge strips at free edges

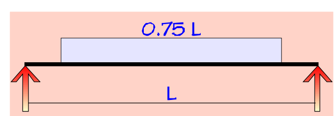
SUPPORT REACTIONS (kN/m char uno) *(See Figure 3.10)*

Sum ßvx = 0.758 — Table 3.15

Sum ßvy = 0.660

		EDGE 1 1, F-G	EDGE 2 G, 2-1	EDGE 3 2, F-G	EDGE 4 F, 2-1
ßv		0.455	0.396	0.303	0.264
Dead	kN/m	15.28	13.31	10.19	8.88
Imposed	kN/m	3.73	3.25	2.48	2.16
Vs	kN/m	27.4	23.8	18.2	15.9

equations 19 & 20



OUTPUT/SUMMARY

PROVIDE MAIN STEEL	SHORT SPAN	LONG SPAN	EDGE 1 1, F-G	EDGE 2 G, 2-1	EDGE 3 2, F-G	EDGE 4 F, 2-1
	H12 @ 275 B1	H12 @ 275 B2	H12 @ 275 T1	H12 @ 275 T2	H12 @ 275 T1	H12 @ 275 T2

ADDITIONAL TORSION STEEL	CORNER 1 F1	CORNER 2 G1	CORNER 3 G2	CORNER 4 F2
X direction				
Y direction				

placed in edge strips

CHECKS

Lx > Ly	BAR Ø < COVER	SINGLY REINFORCED	MIN SPACING	MAX SPACING	DEFLECTION	GLOBAL STATUS
OK	OK	OK	OK	OK	OK	VALID DESIGN

Project	12 Park Village Wesr		Made by	Date	Page
Client		The Concrete Centre			
Location	Basement Slab Heave	F to G: 1 to 2	Checked	Revision	Job No

2-WAY SPANNING INSITU CONCRETE SLABS to BS 8110:2005 (Table 3.14)

Originated from RCC94.xls v3.1

STATUS VALID DESIGN

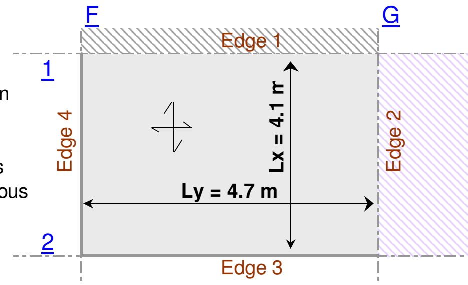
DIMENSIONS			MATERIALS			
short span, lx	m	4.10	fcu	N/mm²	35	γc = 1.50
long span, ly	m	4.70	fy	N/mm²	500	γs = 1.15
h	mm	300	steel class		A	
Top cover	mm	30	Density	kN/m³	24	
Btm cover	mm	40	(Normal weight concrete)			

LOADING *characteristic*

					EDGE CONDITIONS		
Self weight	kN/m²	7.20			Edge 1	C	C = Continuous
Extra dead	kN/m²	0.00			Edge 2	C	D = Discontinuous
Total Dead, gk	kN/m²	7.20	γf=	1.40	Edge 3	D	
Imposed, qk	kN/m²	35.80	γf=	1.60	Edge 4	d	
Design load, n	kN/m²	67.36					

See Figure 3.8 and clauses 3.5.3.5-6

Plan



MAIN STEEL		SHORT SPAN x	LONG SPAN y	EDGE 1 Continuous	EDGE 2 Continuous	EDGE 3 Free	EDGE 4 Free	BS8110 Reference
ßs		0.044	0.034	0.059	0.045	0.000	0.000	Table 3.14
M	kNm/m	50.2	38.5	67.0	51.3	0.0	0.0	
d	mm	254.0	242.0	264.0	252.0	264.0	252.0	
k'		0.156	0.156	0.156	0.156	0.156	0.156	
k		0.022	0.019	0.027	0.023	0.000	0.000	
Z	mm	241.3	229.9	250.8	239.4	250.8	239.4	3.4.4.4
As req	mm²/m	479	385	614	493	0	0	
As min	mm²/m	390	390	390	390	390	390	Table 3.25
As deflection	mm²/m	479	385	~	~	~	~	
Ø	mm	12	12	12	12	12	12	
Layer		B 1	B 2	T 1	T 2	T 1	T 2	
@	mm	225	275	175	225	275	275	
As prov	mm²/m	503	411	646	503	411	411	
=	%	0.198	0.170	0.245	0.199	0.156	0.163	%
S max	mm	762	738	762	762	762	762	Clause
Subclause		(a)	(a)	(a)	(a)	(a)	(a)	3.12.11.2.7
DEFLECTION								
fs		317	312	317	327	0	0	Eqn 8
Mod factor		1.342						Eqn 7
Perm L/d		34.89	Actual L/d	16.14	*Asx enhanced 0.0% for deflection control*			Table 3.10

TORSION STEEL

			BOTH EDGES DISCONTINUOUS X	BOTH EDGES DISCONTINUOUS Y	ONE EDGE DISCONTINUOUS X	ONE EDGE DISCONTINUOUS Y	
Ø	mm	10					
As req	mm²/m		390		390		3.5.3.5
As prov T	mm²/m		411	411	411	411	
Additional As T req	mm²		0	0	0	0	
As prov B	mm²/m		503	411	503	411	

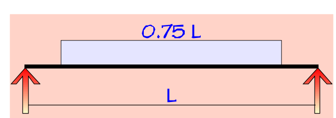
Bottom steel not curtailed in edge strips at free edges

SUPPORT REACTIONS (kN/m char uno) *(See Figure 3.10)*

Sum ßvx = 0.758 — Table 3.15

Sum ßvy = 0.660

		EDGE 1 1, F-G	EDGE 2 G, 2-1	EDGE 3 2, F-G	EDGE 4 F, 2-1
ßv		0.455	0.396	0.303	0.264
Dead	kN/m	13.42	11.69	8.95	7.79
Imposed	kN/m	66.72	58.12	44.48	38.75
Vs	kN/m	125.5	109.4	83.7	72.9



equations 19 & 20

OUTPUT/SUMMARY

	SHORT SPAN	LONG SPAN	EDGE 1 1, F-G	EDGE 2 G, 2-1	EDGE 3 2, F-G	EDGE 4 F, 2-1
PROVIDE MAIN STEEL	H12 @ 225 B1	H12 @ 275 B2	H12 @ 175 T1	H12 @ 225 T2	H12 @ 275 T1	H12 @ 275 T2

ADDITIONAL TORSION STEEL	CORNER 1 F1	CORNER 2 G1	CORNER 3 G2	CORNER 4 F2
X direction				
Y direction				

placed in edge strips

CHECKS Lx > Ly	BAR Ø < COVER	SINGLY REINFORCED	MIN SPACING	MAX SPACING	DEFLECTION	GLOBAL STATUS
OK	OK	OK	OK	OK	OK	VALID DESIGN

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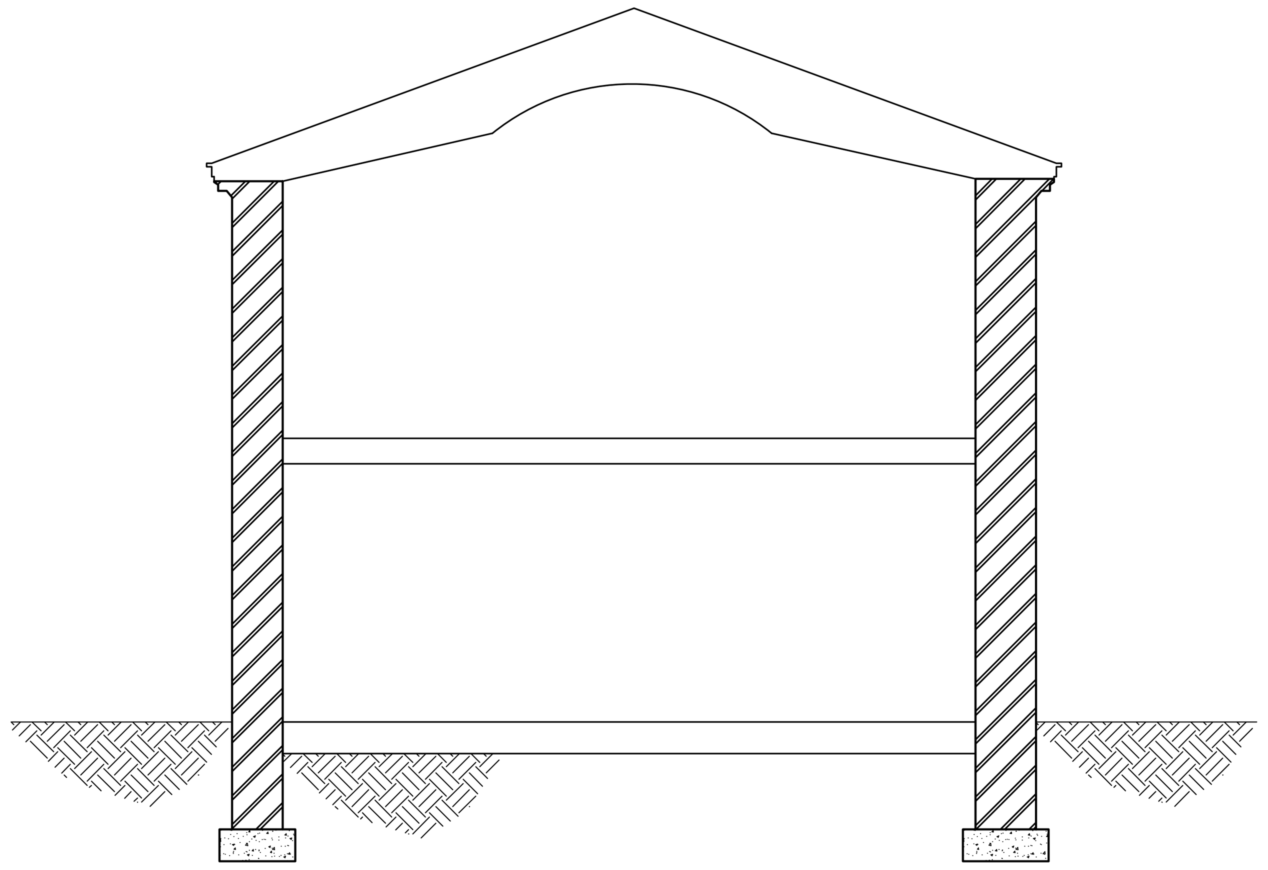
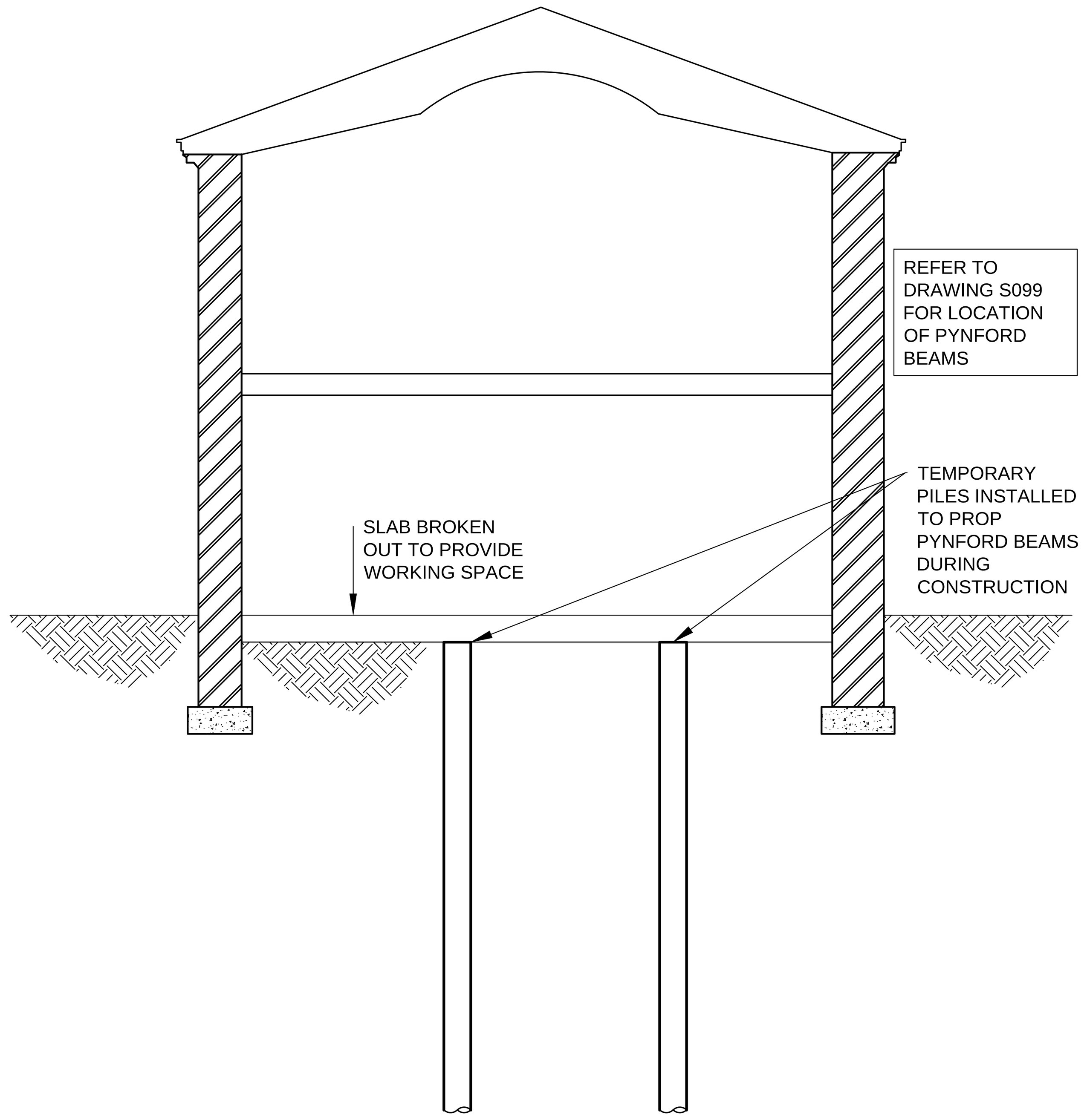
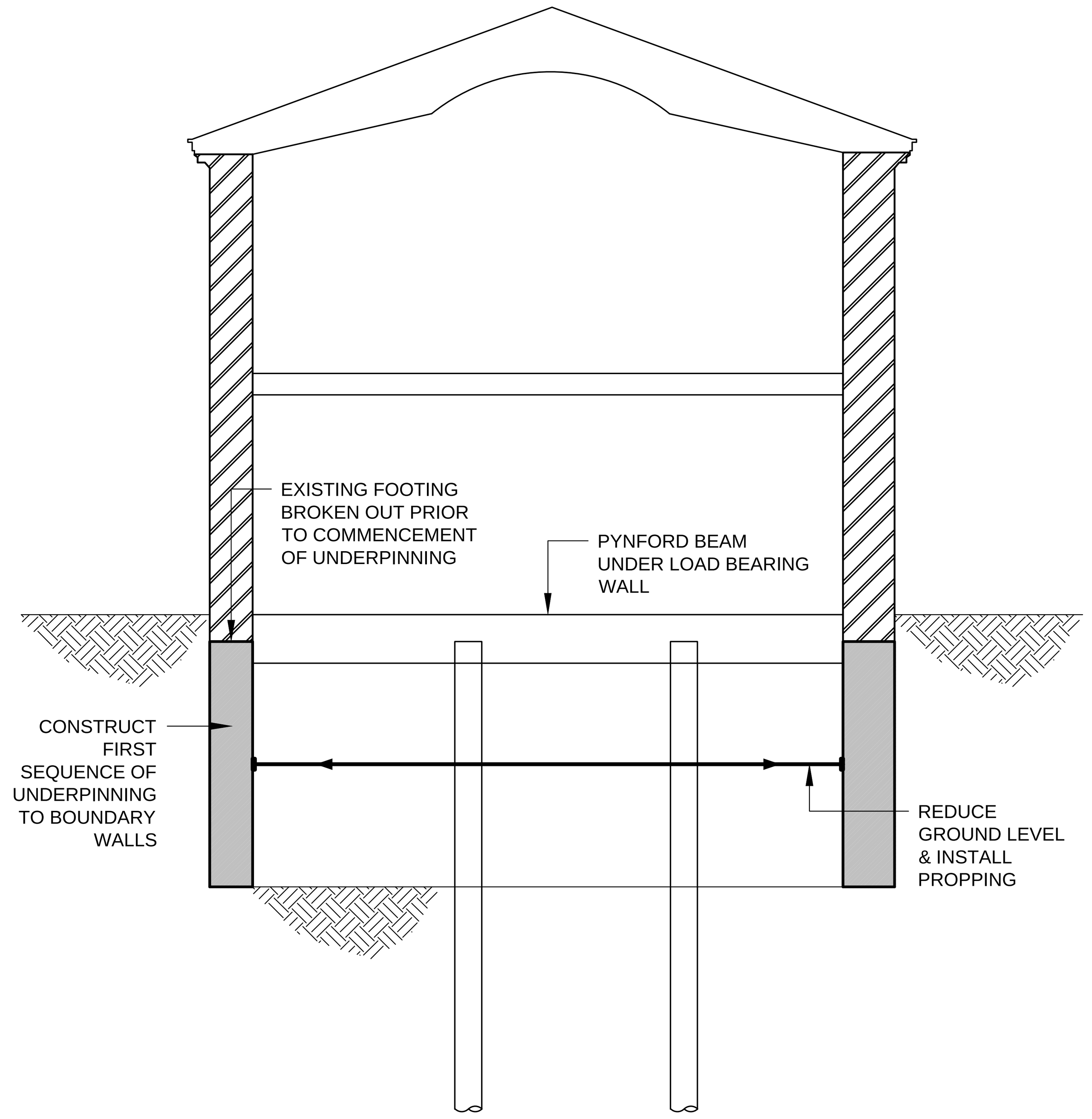
Appendix C – Construction Method Statement



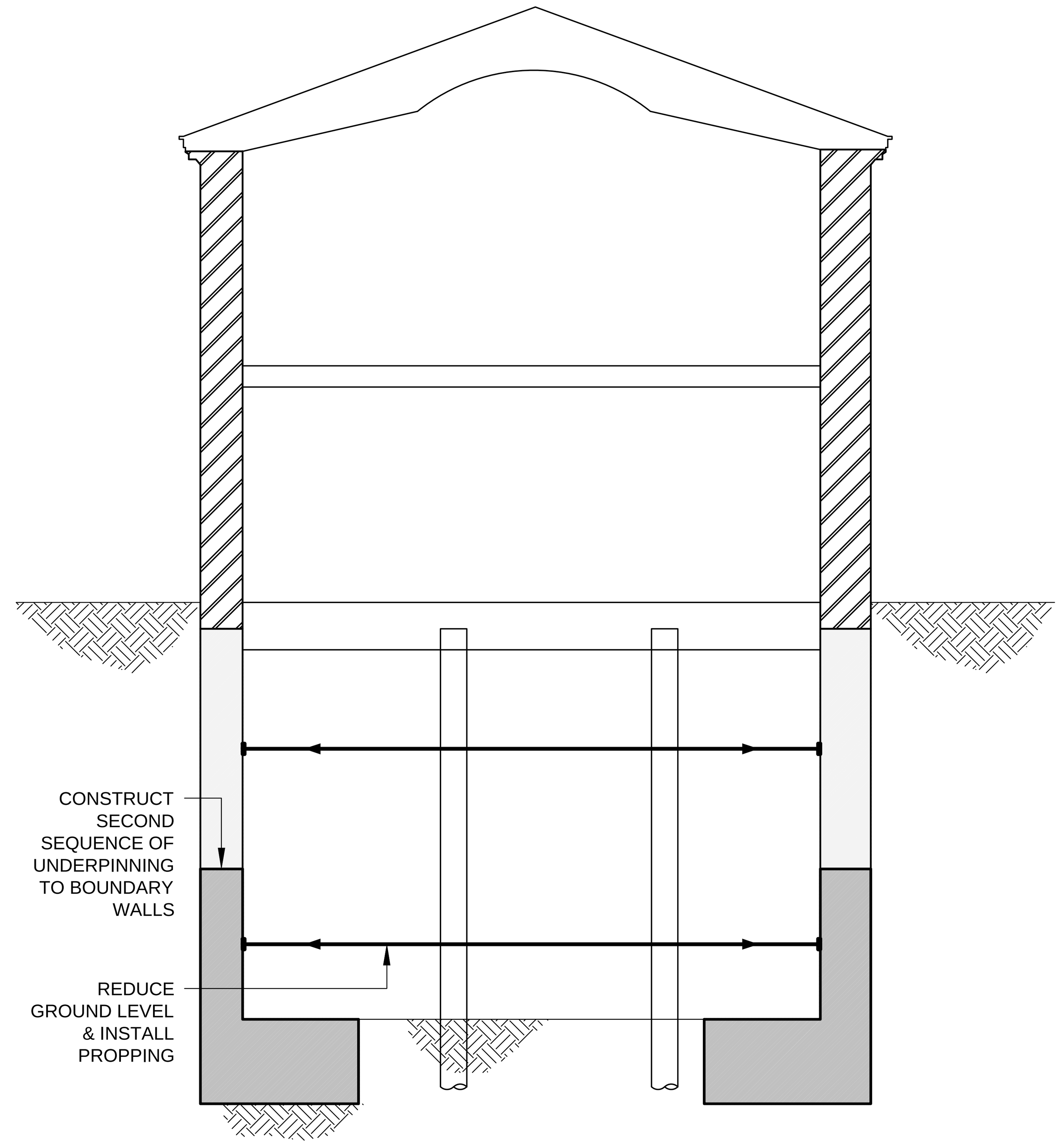
CROSS SECTION THROUGH EXISTING STRUCTURE



CROSS SECTION THROUGH BASEMENT PHASE 1 - GROUND FLOOR SLAB LOCALLY BROKEN OUT, TEMPORARY PILES INSTALLED & PYNFORD BEAMS CAST

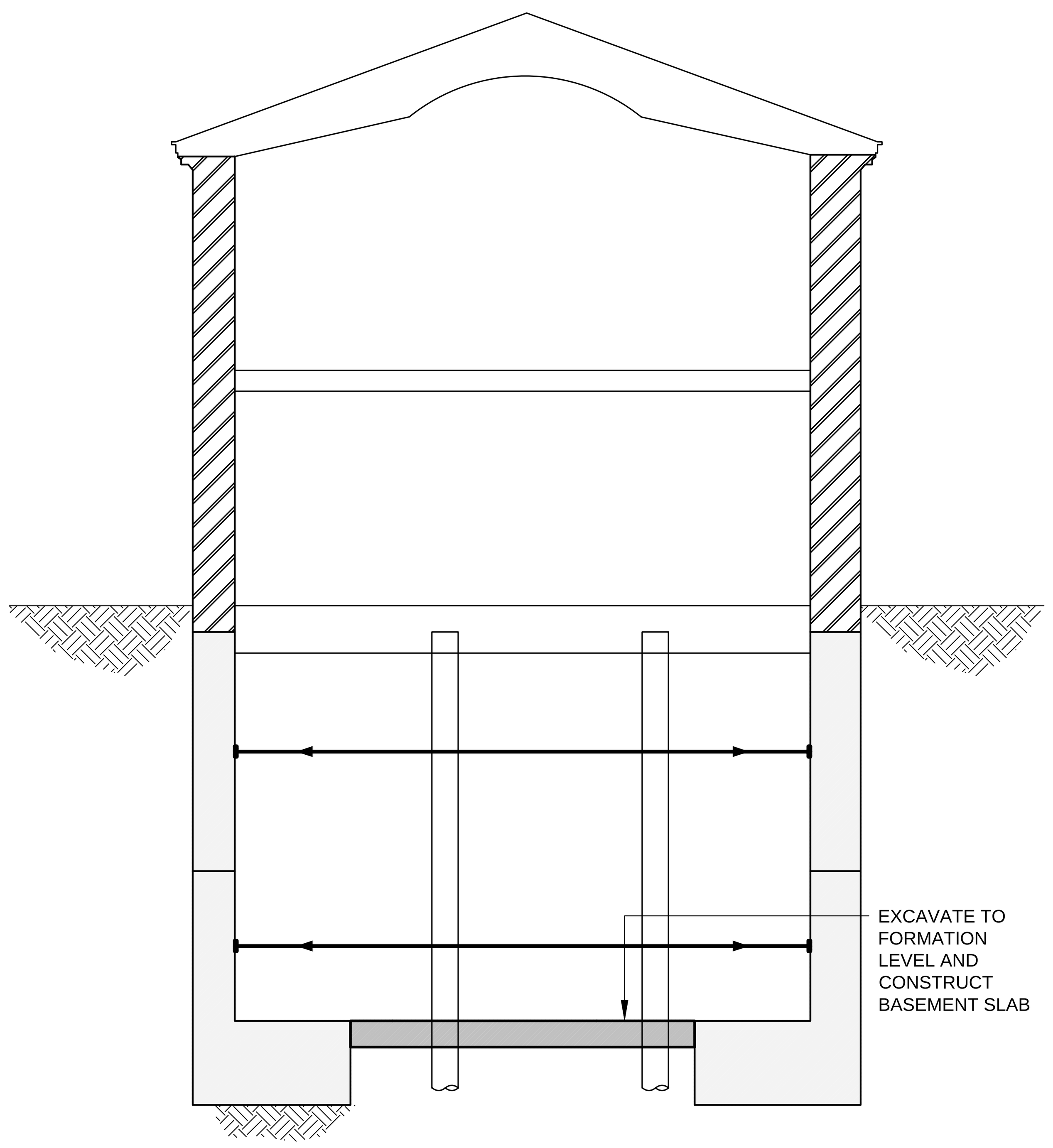


CROSS SECTION THROUGH BASEMENT PHASE 2 - STAGE 1 RETAINING WALL, REDUCED DIG & PROP

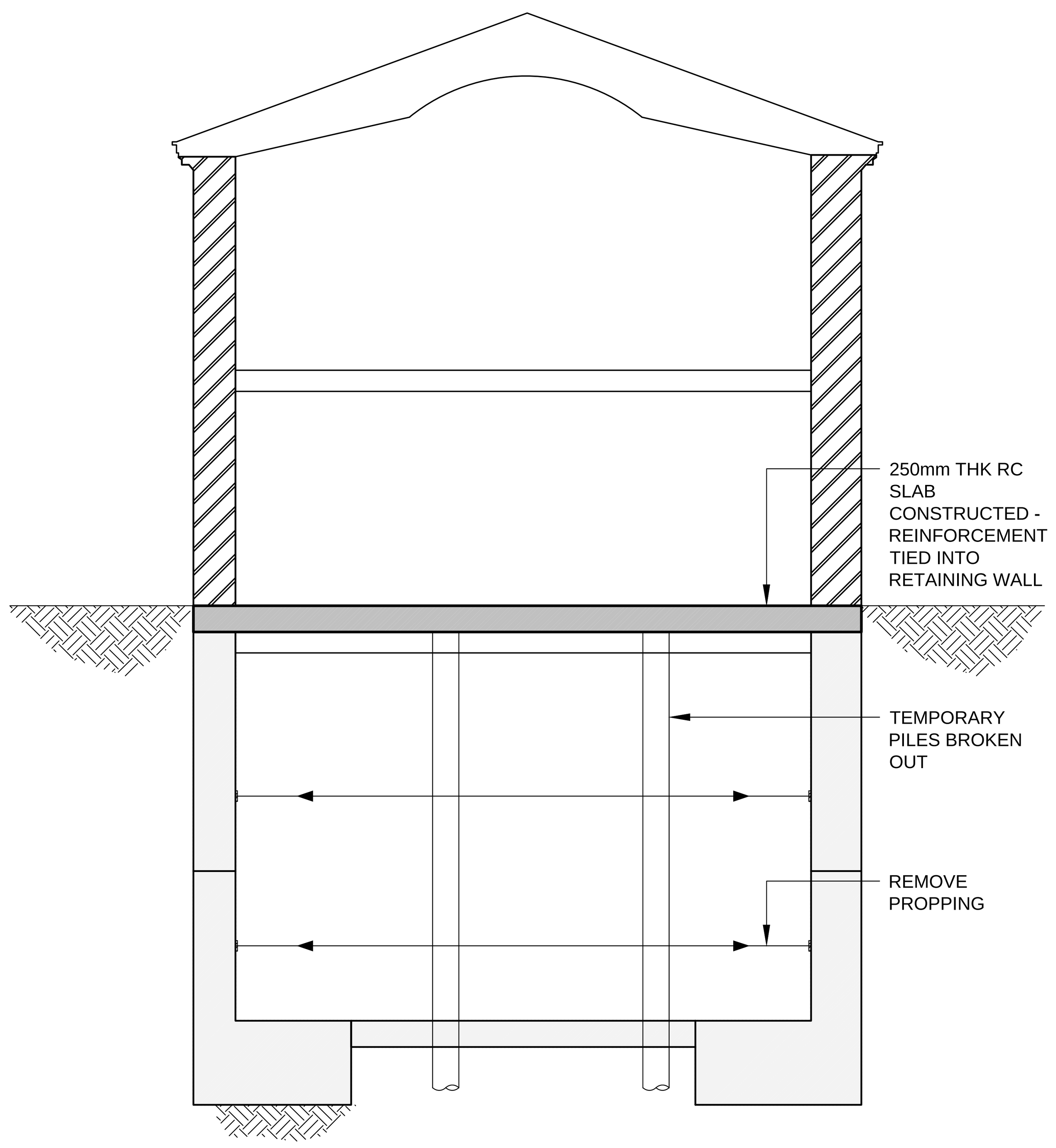


CROSS SECTION THROUGH BASEMENT PHASE 3 - STAGE 2 RETAINING WALL, REDUCED DIG AND PROP

THE PRINCIPLE OF THIS SEQUENCE APPLIES THROUGHOUT PROPOSED BASEMENT



CROSS SECTION THROUGH BASEMENT PHASE 4 - CONSTRUCTION OF BASEMENT SLAB



CROSS SECTION THROUGH BASEMENT PHASE 5 - GROUND FLOOR SLAB CONSTRUCTED

NOTE:
SOIL LEVELS OUTSIDE THE COACH HOUSE ONLY TO REDUCE ONCE UNDERPINNING OF THE COACH HOUSE IS COMPLETE

NOT FOR CONSTRUCTION

Rev	Date	Description	Drawn	Check
P2	27.05.16	ISSUED FOR INFORMATION	MT	CB
P1	14.08.15	ISSUED FOR INFORMATION	MT	CB

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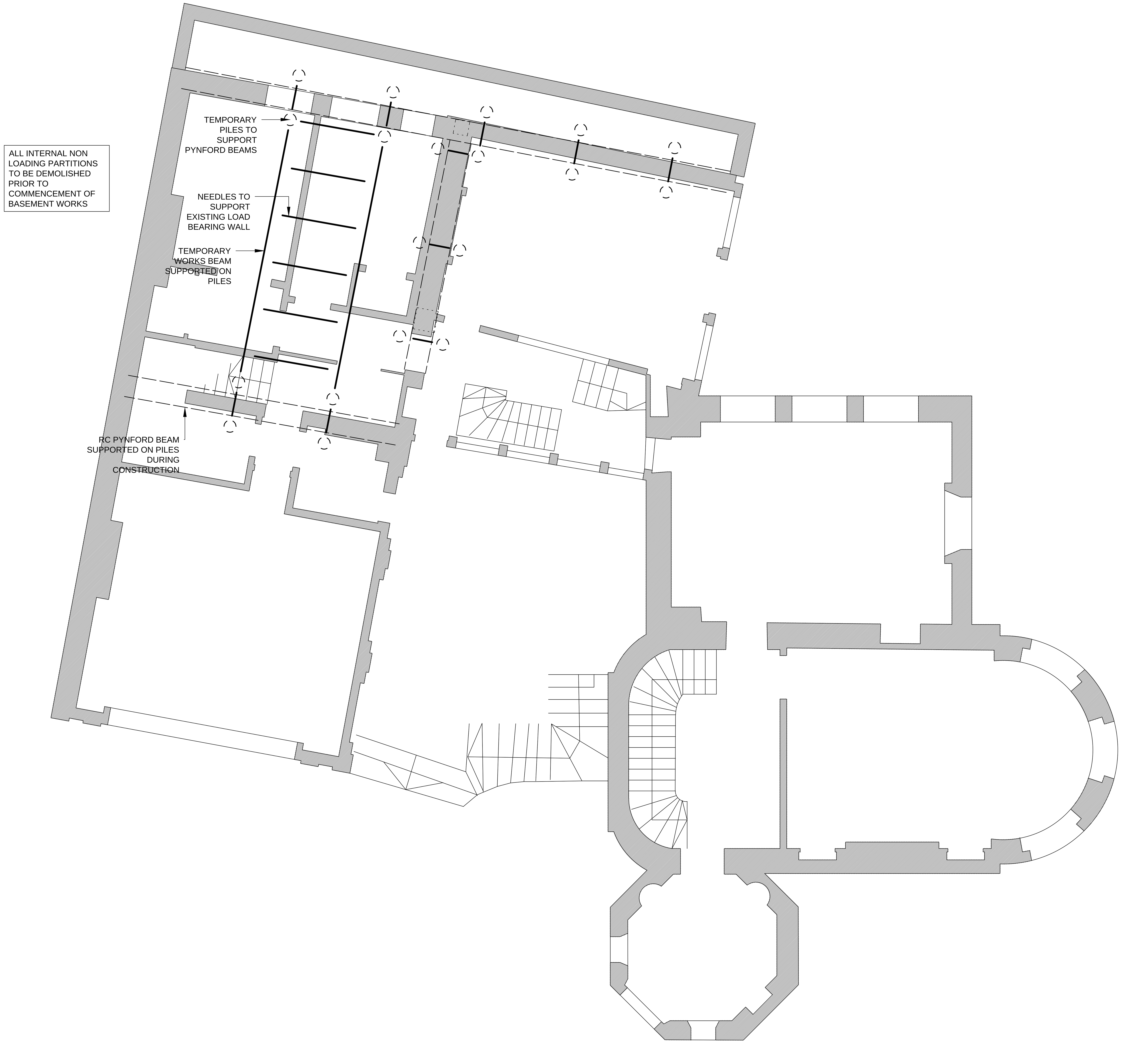
Drawing Status: PLANNING
Project: 12 PARK VILLAGE WEST LONDON
Title: SUGGESTED CONSTRUCTION SEQUENCE
Date: AUG 15
Scale: 1:50@A1
Drawn: MT
Engineer: MT
Project No: **140627**
Drawing No: **SSK001**
Revision: **P2**

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL OTHER RELEVANT DRAWINGS. DO NOT SCALE FROM THIS DRAWING.

NOTES

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, DRAINAGE AND SPECIALIST DRAWINGS AND SPECIFICATIONS.
2. THE CONTRACTOR IS TO ASCERTAIN THE LOCATION OF EXISTING SERVICES PRIOR TO COMMENCING WORKS.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF ALL TEMPORARY WORKS AND SHALL SEQUENCE THE WORKS SUCH THAT THE BUILDING REMAINS STABLE AT ALL TIMES.



NOT FOR CONSTRUCTION

Rev	Date	Description	Drawn	Check
P1	14.08.15	ISSUED FOR INFORMATION	MT	CB

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Drawing Status
PLANNING

Project
12 PARK VILLAGE WEST
LONDON

Title
PROPOSED TEMPORARY WORKS
GROUND FLOOR PLAN

Date AUG 15
Scale 1:50@A1
Drawn MT
Engineer MT
Project No **140627**
Drawing No **S099**
Revision **P1**