eckersley o'callaghan structural and facade engineers

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12207/RER

8th July 2014

Sally Mackereth
Studio Mackereth
63a South Audley Street
London
W1K 2QS

Dear Sally

7 ST. PANCRAS WAY, LONDON NW1 0PB

Further to receipt of the LBH Wembley report referenced LBH 4241 Ver 1.0 of 23rd June 2014, please find enclosed a Construction Method Statement "Sequence of works for the construction of the new Basement" produced by the contractor's temporary works engineers, Lucking & Clark, who are reputable structural engineers with a specialism in temporary works design. This should be read in conjunction with the following documents:

- Basement Impact Assessment by Chelmer Consultancy Services dated December 2013.
- BIA addendum LR4685 "Comments on Construction Methodology" by Chelmer Consultancy Services dated July 2014 (appended to this letter).

The latter document presents Chelmer's opinion that the open cut excavation for the basement is a satisfactory method of construction given a more detailed examination of the nature of the soils on the site.

With reference to the conclusions in the LBH Wembley report, as requested we can confirm the following:

- BH2 is directly adjacent to the basement footprint with BH1 approximately 12m away. This can be seen from the site investigation report (extract attached).
- Standpipes were installed to 8.0m depth (see borehole logs attached), thus covering the London Clay and the soil strata above it.

We trust this sufficiently addresses the LBH Wembley comments, however, if you have any queries or require any further information, please do not hesitate to contact us.

Yours sincerely

Robert Rock
Senior Structural Engineer

Encs.

Project	7 St. Pancras Way	03/03/2014
01714	Sequence of works for the construction of the new Basement	issue 2
Sequence		

NOTE
This method statement is to be read in conjunction with relevant L&C sketches, details and specifications as well as information provided by others.

All live services in the area of works are to be disconnected, re-routed or protected to details and specification by others.

It is assumed that at this stage all the repairs to brickwork have been completed.

1. Form padstones and install stout timber frames within existing window openings that are to receive temporary beams.

2. Install temporary X-Beam trusses and associated scaffold tube lacing and bracing to existing roof trusses on Grid Lines 2, 2A and 5 – for plan see L+C sketch SK.01.

   # L+C to inspect

3. Remove existing cast iron columns on Grid Lines 2 and 5 and carefully remove wall on Grid Line 2A (for plan see L+C sketch SK.01) – by others.

4. Reduce ground level in central area to first waling beams level – Level TBA.

5. Install waling beams parallel to Grid Lines A and G (together with associated props parallel to Grid Lines 2 and 5.

   # L+C to inspect

6. Battering the soil back excavate to final formation level – Level TBA.

   NOTE
   A. Take extra care to avoid undermining existing walls. If ground conditions encountered on site vary from those described in the site investigation works stop works and seek Engineer's advice.

7. Install drainage and cast blinding to specification by others.

8. Install reinforcement and cast Basement slab boxing out around the sump pit. Allow minimum 3 days before commencing the next stage of this sequence.

9. Form sump pit and install formwork/reinforcement and cast Basement walls. Leave pockets around the props crossing site. Allow minimum 3 days before commencing the next stage of this sequence.

10. Install formwork and reinforcement and cast part of the Ground Floor forming a roof to the Basement. Allow concrete to cure to the required strength before commencing the next stage of this sequence.

11. Backfill behind the basement walls – to specification by others.

12. Remove props and waling beams to the walls and make good pockets in walls.

13. Prop the existing roof trusses on Grid Lines 2, 2A and 5 off the completed part of the Ground Floor slab – by others.

14. Remove/relocate temporary X-beams and associated ladder beams and scaffold tube lacing and bracing to new position (u/s of existing roof trusses on Grid Lines 1A and 5A).

    # L+C to inspect

15. Remove existing cast iron columns on Grid Lines 1A and 5A – by others.

16. Working on one foundation at a time commence excavation works for the mass concrete trench foundations. Sides of the excavation are to be well strutted using trench sheeting and props.

    NOTE
    B. If the completed part of the Ground Floor slab is to be driven over during works (subject to permanent works Engineer's approval), back-propping of this slab will be needed.
    C. Sleeve drainage passing any of the trench foundations where/if required – refer to drawings and specification by others.

17. After reaching the required formation level (to specification by others) commence concrete pour. On completion withdraw trench sheeting and propping and top up concrete if necessary.

18. Alternating works between one and the other end of the building repeat steps 15 and 16 until all trench foundations are cast.

    NOTE
    No excavation works are to take place within 2.5m around the trench foundation less than 3 days old.

19. Once all the trench foundations have been formed install drainage.

20. Install reinforcement and cast the remainder of the Ground Floor slab. Allow minimum 3 days for the concrete of the slab to cure before commencing next stage of this sequence.

21. Restrain Ground Floor walls – by others.

22. Remove existing roof – by others.

23. Remove temporary X-beams and all associated scaffold tubes and ladder beams.

24. Remove the redundant timber stud propping to the roof – by others.

25. For the sequence of installation of the new steel frame refer to information by others.

Project	7 Pancras Way				
Title	Basement excavation works – Strutting to walls Notes and general arrangement plan				
Project. No 01714	Sketch No SK.11	Prep. By PJW	Date Feb 14	Checked By	Date

L+C
consulting
structural engineers

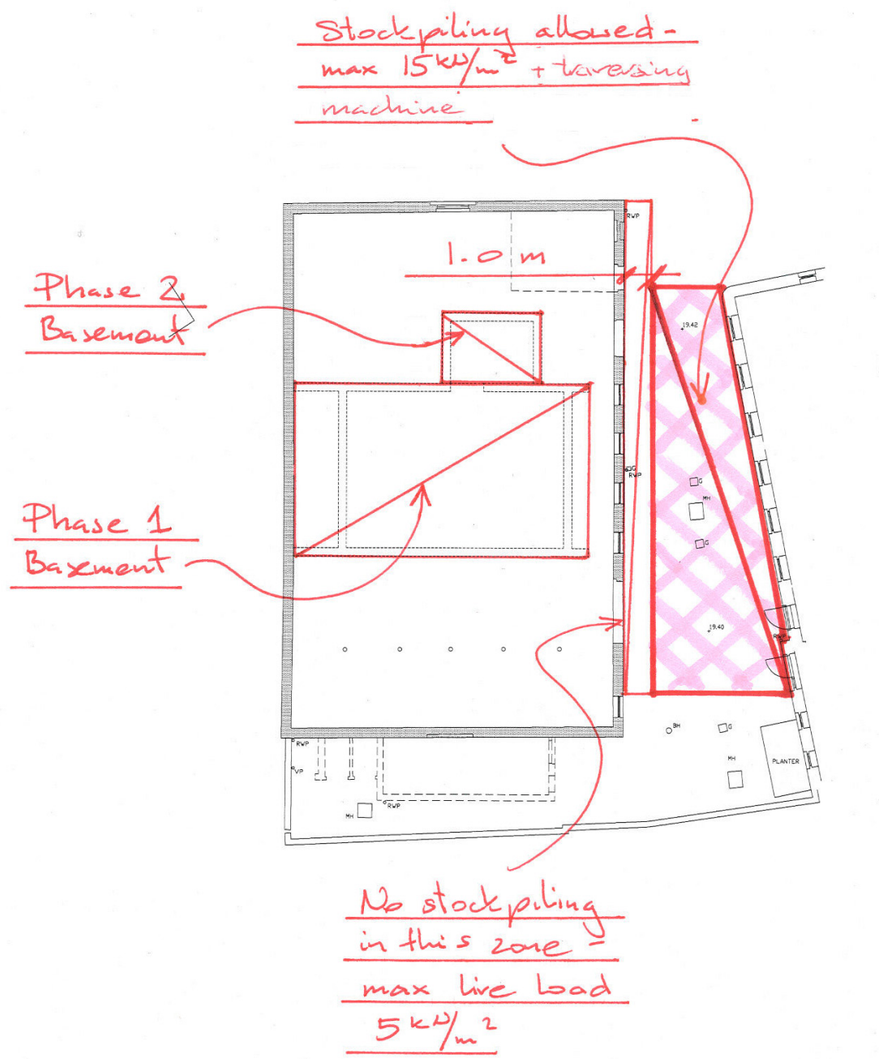
Lucking & Clark LLP
31 Cowcross Street
London, EC1M 6DQ

Tel. 020 7336 8986

info@LCengineers.co.uk
www.LCengineers.co.uk

NOTES

1. All sketches are to be read in conjunction with other L+C information and drawings produced by others.
2. Do NOT scale from the sketches. For setting out refer to drawings by others.
3. For allowable construction load outside of the buildings see the diagram to the right.
4. Allow for additional lacing and bracing of temporary works using scaffold tubes – to be advised on site.
5. All temporary works must be inspected and signed off by L+C prior to loading.
6. If ground conditions encountered during excavation works differ from those described in geotechnical report STOP excavation works and contact L+C for advice.
7. Basement is to be constructed in two phases as shown on the diagram to the right.
8. Phase 2 works can commence only after the excavation behind the RC walls of Phase 1 have been backfilled with well compacted material to details and specification by others.
9. Excavation behind the RC wall of Phase 1 can only be backfilled after the Ground Floor slab over this area has been formed and cured. If the backfilling is required to take place earlier than that contact L+C for confirmation as propping to RC walls may be needed.
10. The existing foundations to long walls and columns are to be explored by digging local trial pits. Trial pits can be dug after the initial ground level reduction but BEFORE commencing the excavation to a final formation level. Exact position of the trial pits is to be agreed with L+C before works commence.
11. For Low Level Ground Floor Plan showing temporary works in Phase 1 and 2 of excavation works see L+C sketches SK.12 and SK.14.
12. For cross section showing temporary works in Phase 1 and 2 of excavation works see L+C sketches SK.13 and SK.15.
13. For typical temporary works details see L+C sketches SK.16 and SK.17



General Ground Floor Plan

Project	7 Pancras Way				
Title	Basement excavation works – Strutting to walls Phase 1 – Low level Ground Floor Plan				
Project. No 01714	Sketch No SK.12	Prep. By PJW	Date Feb 14	Checked By	Date

L+C consulting structural engineers

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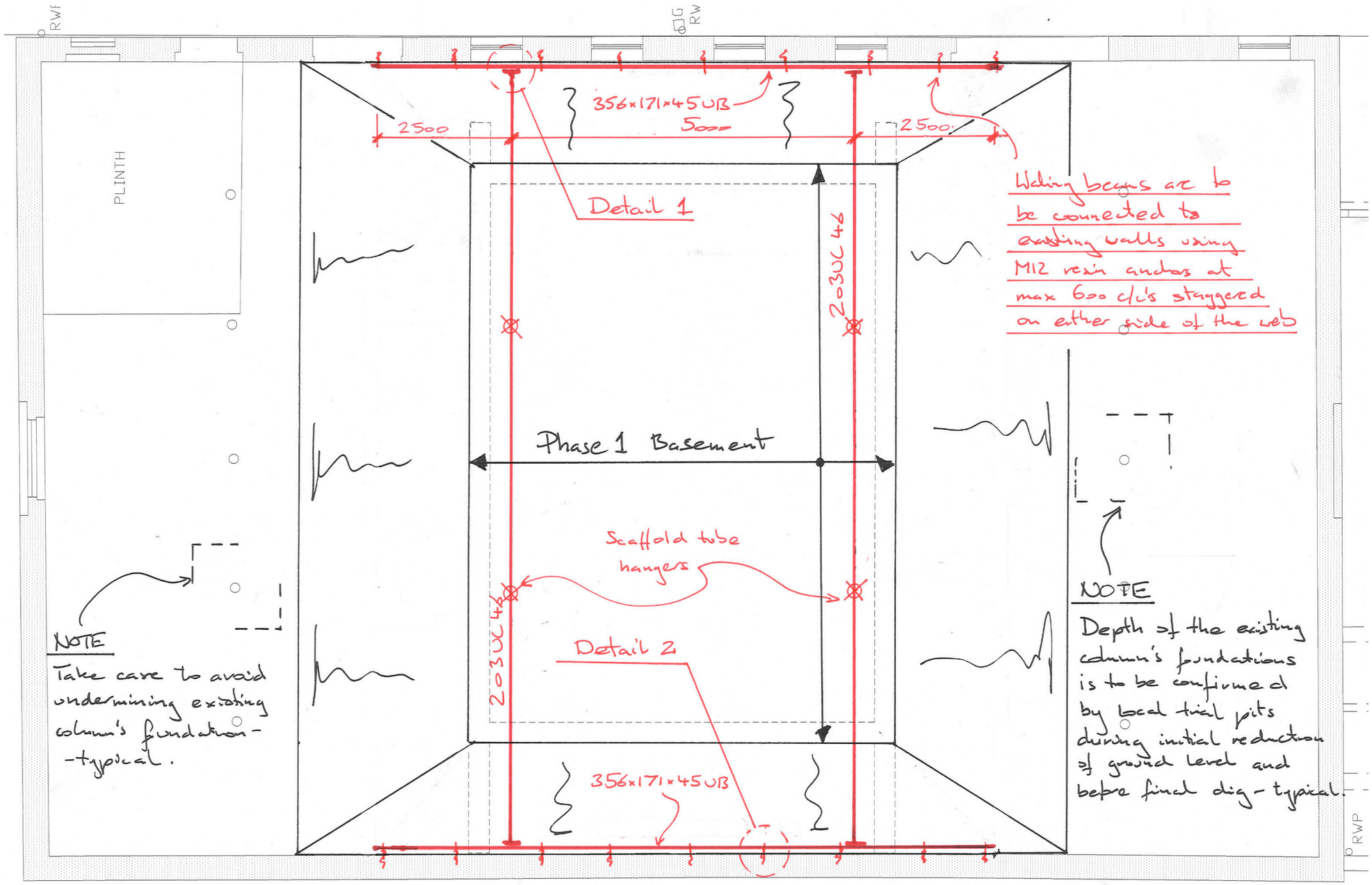
NOTES

1. For general notes on temporary works for excavation works see L+C sketch SK.11.
2. For typical cross section see L+C sketch SK.13.
3. For details see L+C sketch SK.16.



Project	7 Pancras Way				
Title	Basement excavation works – Strutting to walls Phase 1 – Cross Section				
Project. No 01714	Sketch No SK.13	Prep. By PJW	Date Feb 14	Checked By	Date

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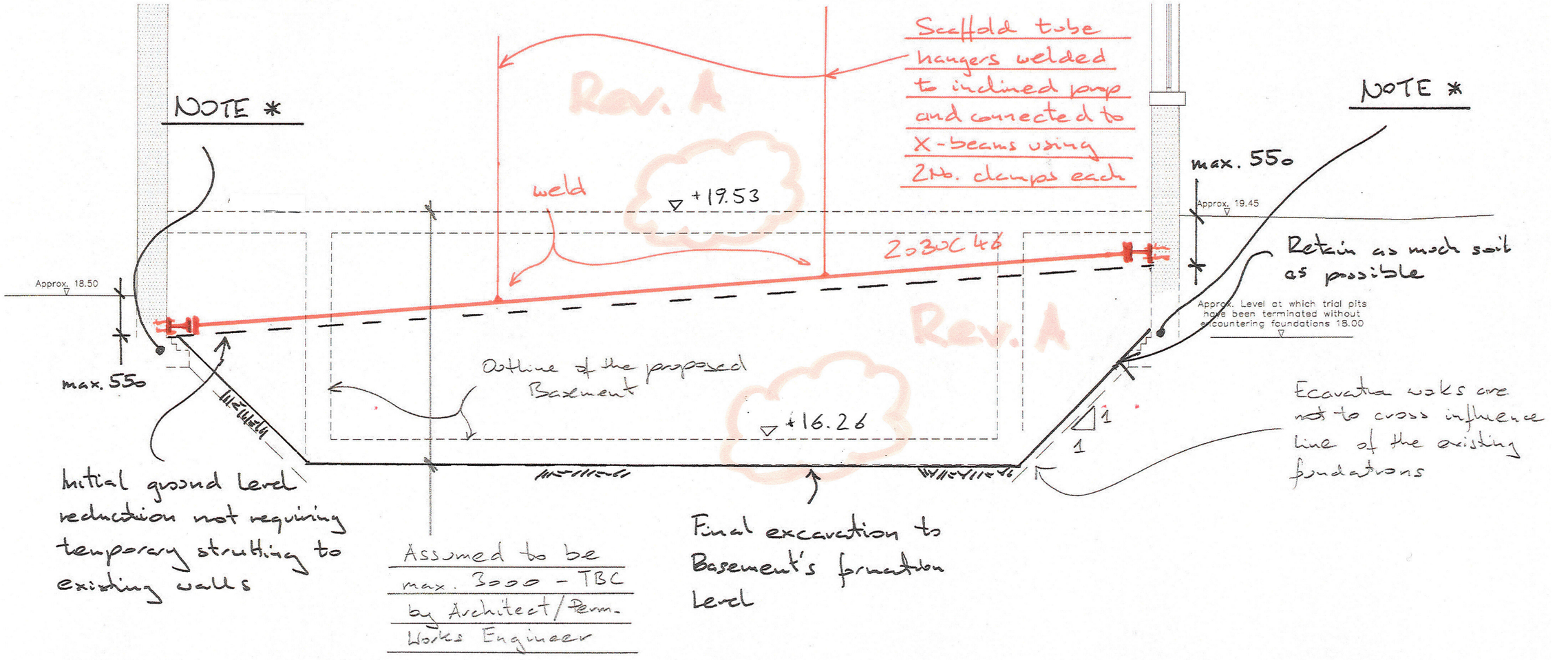
REVISION A – 03/03/2014

NOTES

1. For general notes on temporary works for excavation works see SK.11.

NOTE *

After the ground level has been initially reduced and wailing beams and props installed local trial pits are to be dug to expose fondations to long walls and central columns. Findings are to be communicated to Engineers as soon as possible and further excavation works put on hold.



Project	7 Pancras Way				
Title	Basement excavation works – Strutting to walls Phase 2 – Low Level Ground Floor Plan				
Project. No 01714	Sketch No SK.14	Prep. By PJW	Date Feb 14	Checked By	Date

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NOTES

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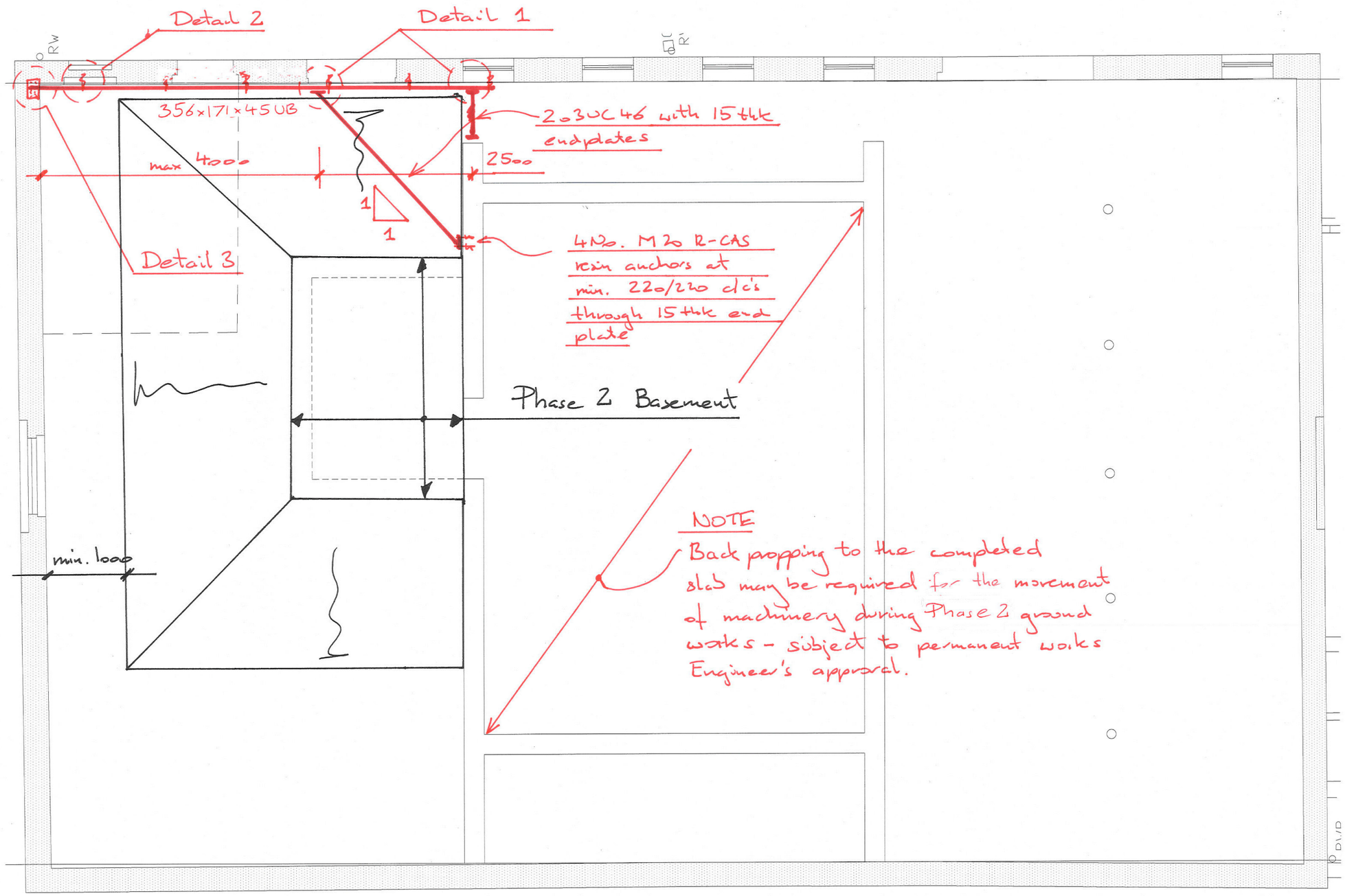
2. For typical cross section see L+C sketch SK.15.
3. For details see L+C sketches SK.16 and SK.17.



Project	7 Pancras Way				
Title	Basement excavation works – Strutting to walls Phase 2 – Cross Section				
Project. No 01714	Sketch No SK.15	Prep. By PJW	Date Feb 14	Checked By	Date

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NOTES

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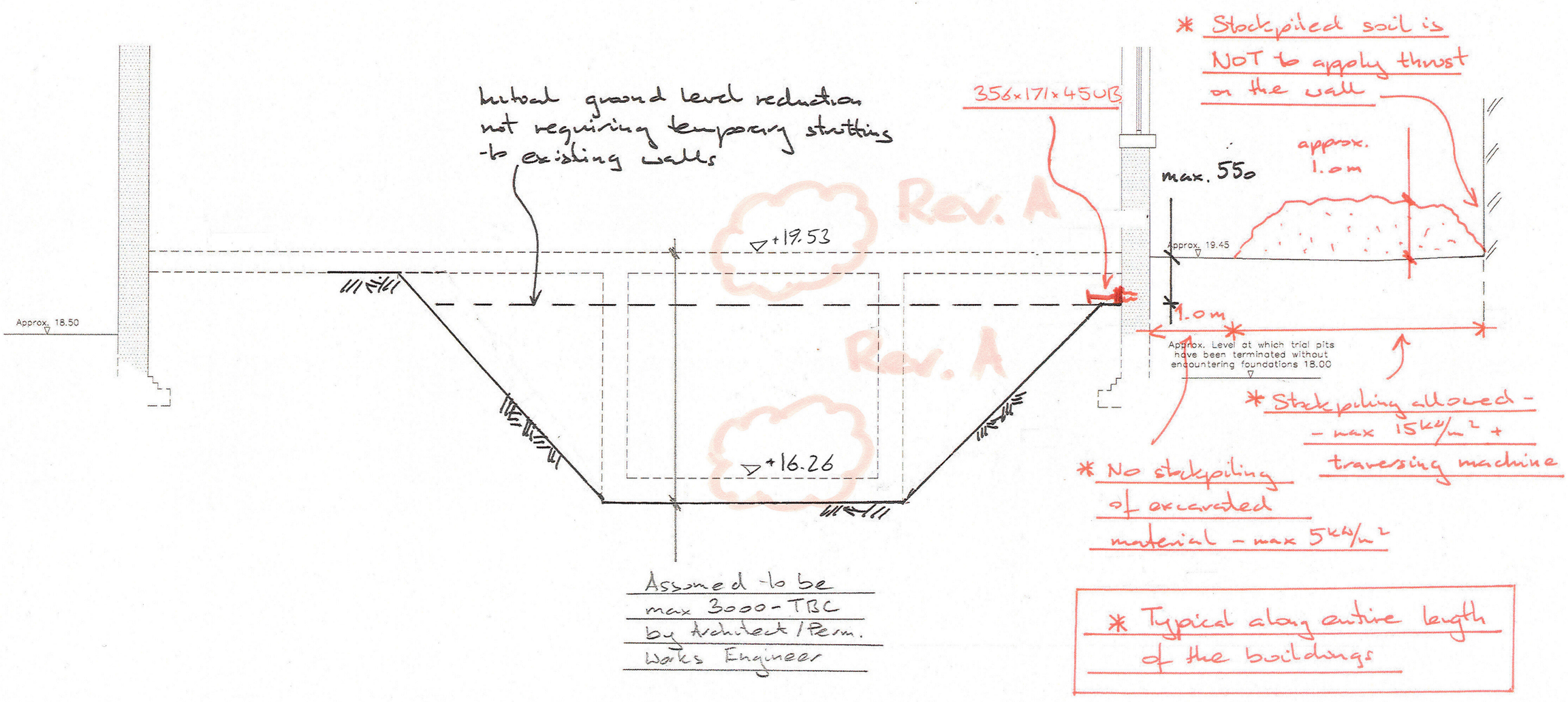

Project	7 Pancras Way				
Title	Basement excavation works – Strutting to walls Details – Sheet 1of2				
Project. No 01714	Sketch No SK.16	Prep. By PJW	Date Feb 14	Checked By	Date

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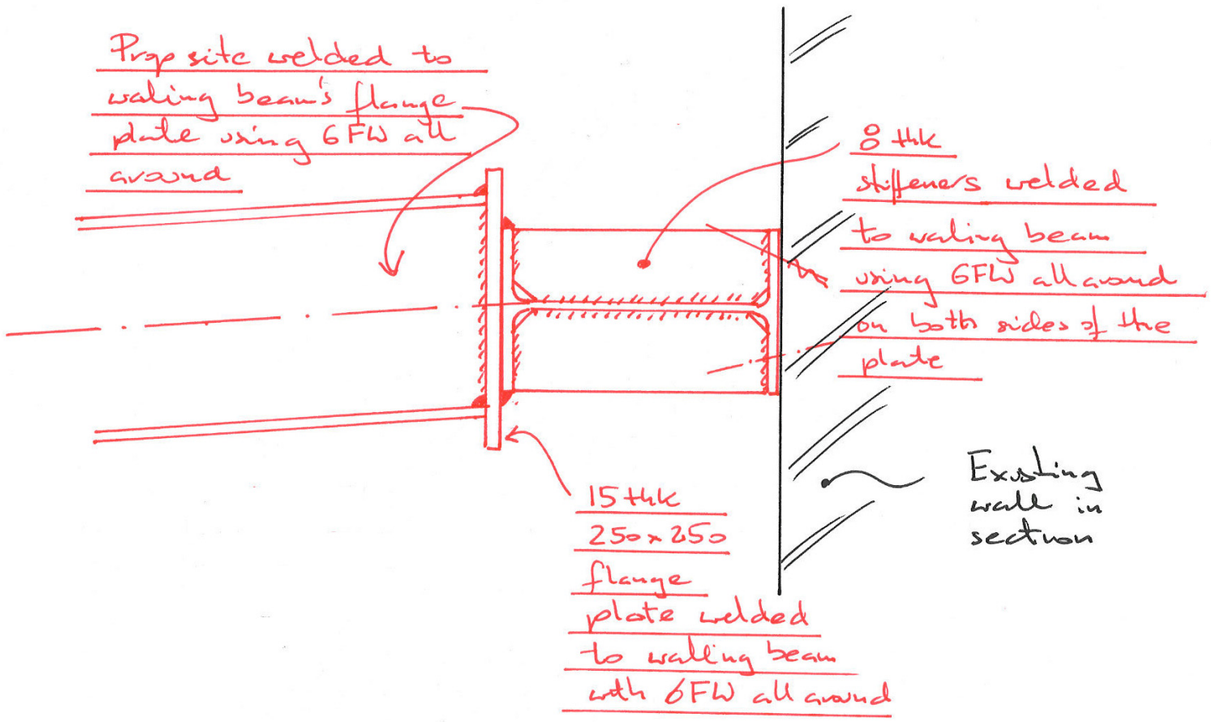
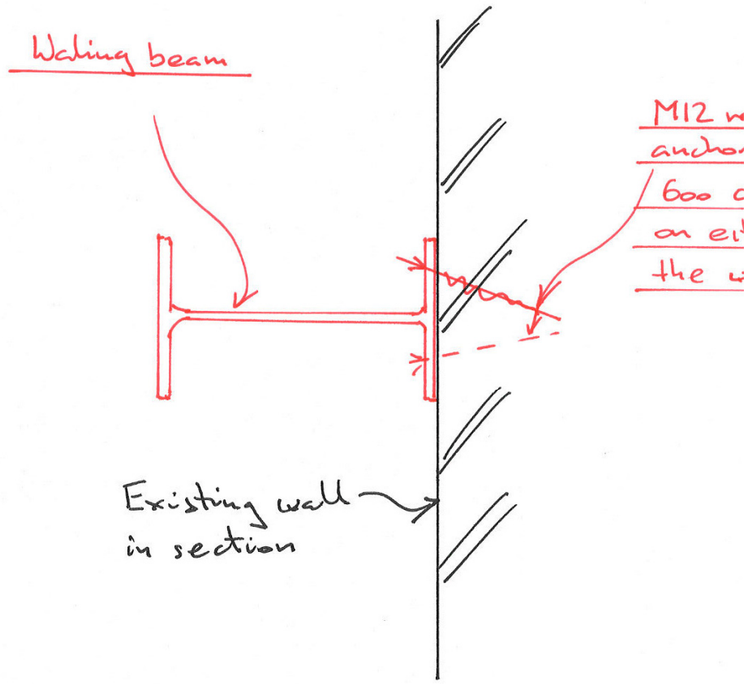


Typical Detail 1



Typical Detail 2

Project	7 Pancras Way				
Title	Basement excavation works – Strutting to walls Details – Sheet 2of2				
Project. No 01714	Sketch No SK.17	Prep. By PJW	Date Feb 14	Checked By	Date

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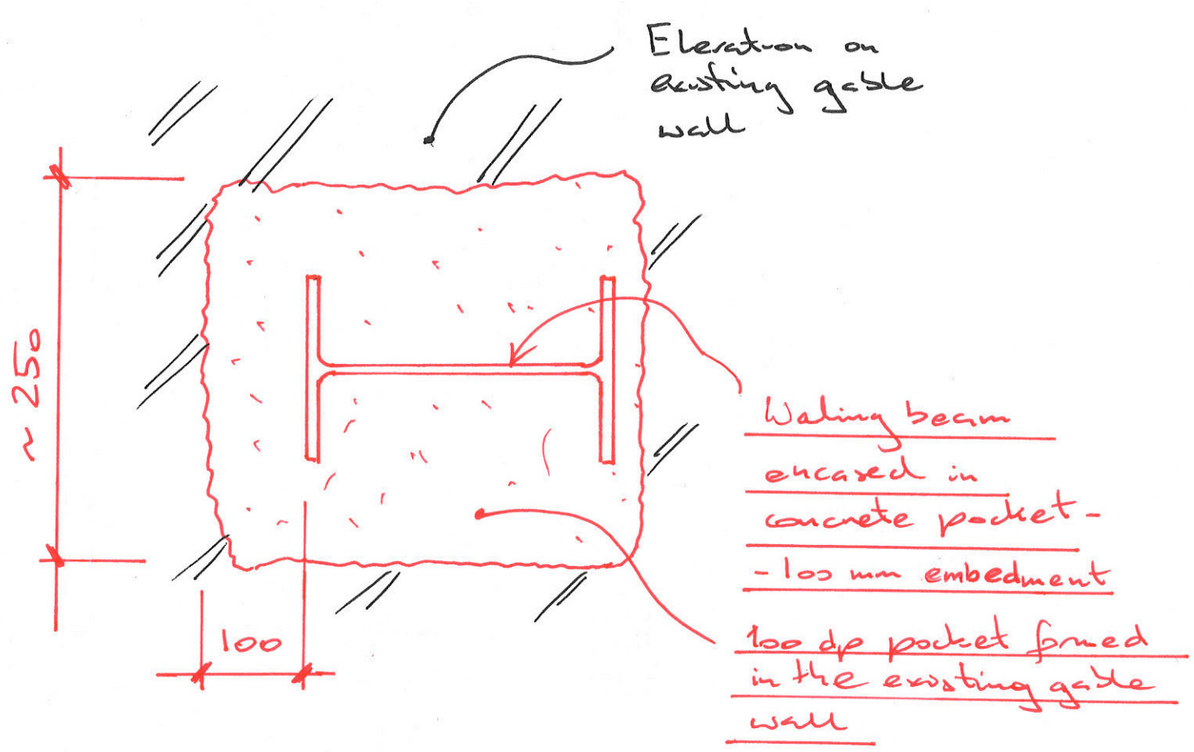

Detail 3

Project	7 Pancras Way				
Title	Basement excavation works – Formwork/back-propping requirements				
Project. No 01714	Sketch No SK.18	Prep. By PJW	Date Feb 14	Checked By	Date

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First Issue – 03/03/2014

NOTES

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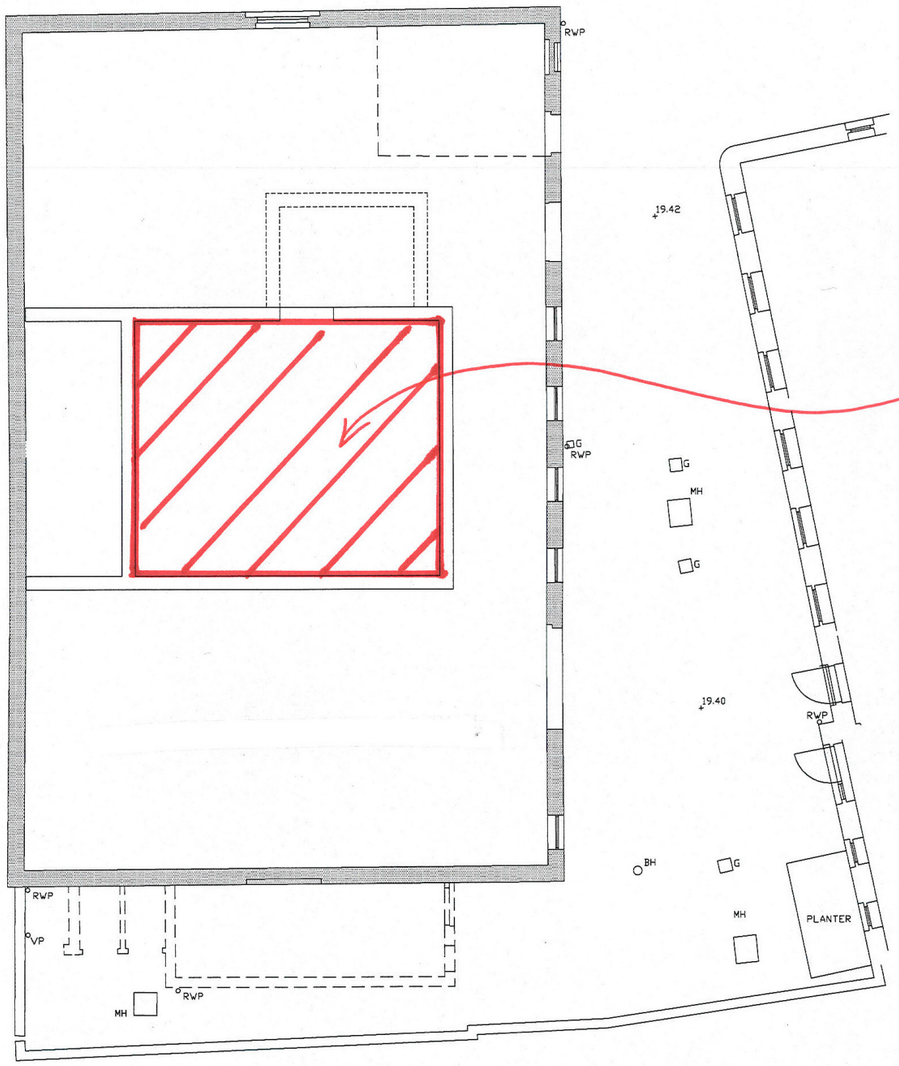

Formwork in hatched area to be designed for additional weight of machinery to be used during Phase 2 Basements construction and further excavation works – by others

(formwork to remain in place until excavation works are complete and movement of machinery has ceased)

Chelmer Consultancy Services

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Comments on Construction Methodology

Client:	Sally MacKereth
Site:	7 St Pancras London NW1 0PB
CCS Ref:	LR4685
Dated:	July 2014

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East Hanningfield, Essex CM3 8AB
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Ms Sally MacKereth
63a South Audley Street
London
W1K 2QS

9th July 2014

CCS Ref: CM/4685

Dear Sirs,

7 St Pancras Way, London NW1 0PB
Comments on Construction Methodology

We have been requested to comment on the construction methodology for the new basement by Lucking & Clark on behalf of the Client for the project Ms Sally Mackereth.

We attended the above site on 2nd July 2014 in order to inspect the excavation which has been carried out. The purpose of this inspection was to enable a re-assessment of the suitability of constructing the basement in open-cut excavations.

The position of the proposed basement has been moved away from the west (rear) wall of the building relative to the location proposed at the time that our Basement Impact Assessment (BIA) report was written. This letter should be read in conjunction with that report.

The excavation for the main, Phase 1 part of the basement has been completed and the basement slab has been cast. Thus, the potentially most onerous parts of the groundworks have been completed. Detailed examination of the soils close to proposed basement level was only possible on the northern side of the basement, where the Phase 2 stairwell will adjoin the main part of the basement.

The soils inspected were all Made Ground which varied from a firm, sandy, silty **clay** with brick fragments to a compact, clayey to very clayey, silty **sand** with brick fragments. A variety of other minor inclusions were present, and we understand that a short section of timber sheeting from the former river bank was also found. Similar soils are understood to be present throughout the basement excavation. These soils are significantly more competent than the very soft, gravelly, sandy, very silty CLAY/very clayey SILT which was recorded below 1.75m in TP4.

No evidence was seen of any instability of the sides of the excavation (with the exception of inevitable minor surface ravelling). Paragraphs 10.4.7 and 10.4.8 of the BIA report may therefore be modified as follows: Having examined the soils in more detail where this has now been possible, we consider that construction in open cut excavation may be used as an alternative to bored piles for this basement provided that the cut slopes are maintained at an appropriate maximum slope angle for the soils encountered, and that the procedures required by Lucking & Clark's 'Sequence of works…' document are followed.

The apparent stability of the excavated slopes is attributed to the clays being sufficiently intact to support a beneficial suction pressure in the short term. The slopes are over-steep for these materials in the long term so the basement walls should be completed and backfilled as soon as possible.

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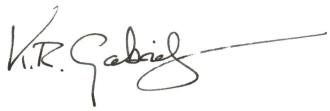
We trust this letter provides sufficient information for present purposes. Please do contact us if you require any clarification of the above matters.

Yours faithfully



Keith Gabriel

Chelmer Site Investigations
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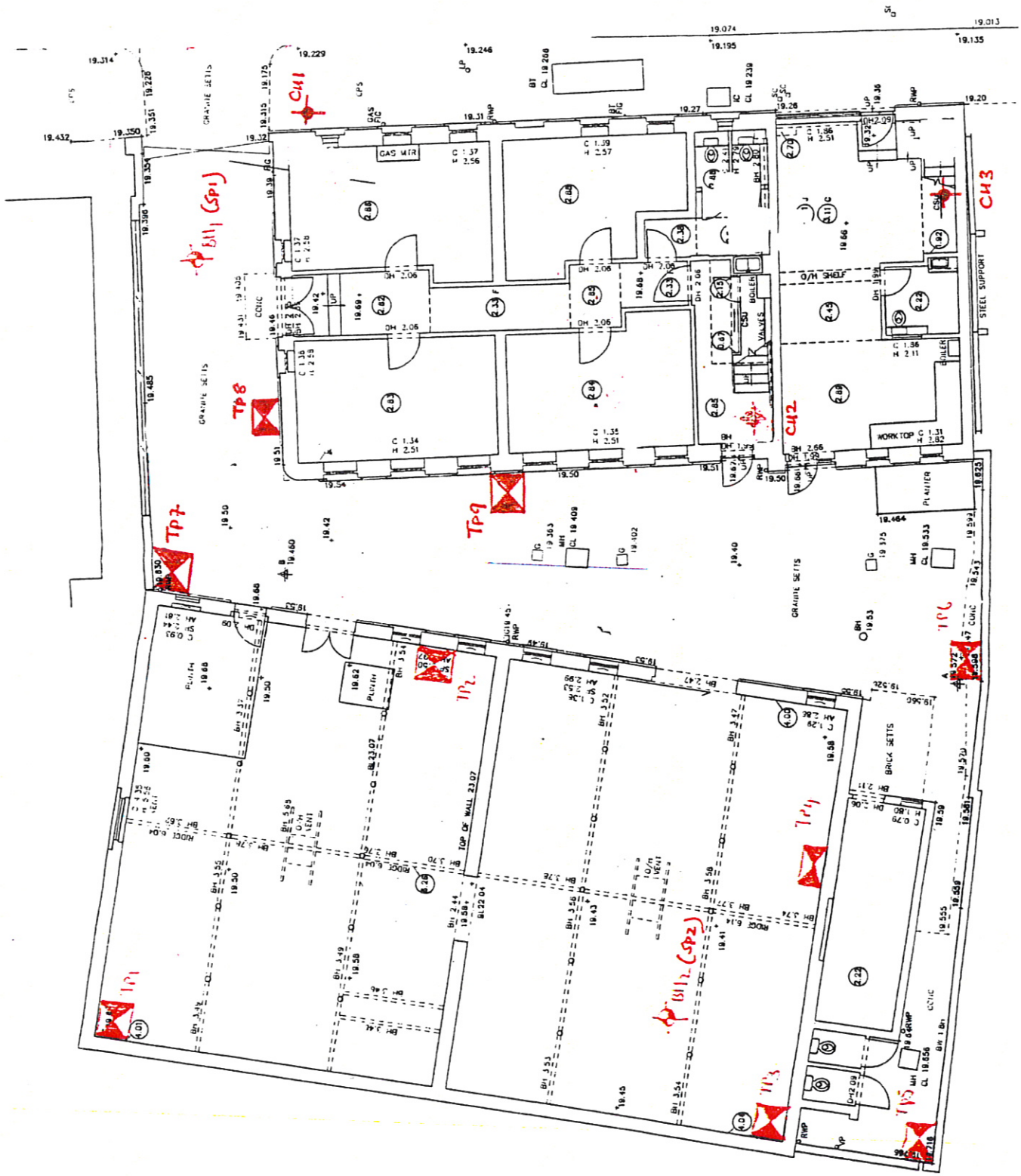
Client: Rinse & Repeat Ltd	**Scale:** N.T.S.	**Sheet:** 1 of 1	**Date:** 24/25 & 27.4.13	
Location: 7 St Pancras Way, Kings Cross, London NW9	**Job No:** 3705	**Weather:** Fair	**Drawn by: DB**	**Checked by: ME**



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Client: Rinse & Repeat Ltd	**Scale:** N.T.S.	**Sheet No:** 1 of 2	**Weather:** Sunny	**Date:** 24.4.13
Site: 7 St Pancras Way, Kings Cross, London NW9	**Job No:** 3705	**Borehole No:** 1	**Boring method:** GEO 205 (150mm Ø) C.F.A.	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
G.L. 0.12	COBBLE STONES (120mm)	0.12							
	MADE GROUND: medium compact, dark brown, gravelly, silty, fine to coarse sand, with flints and numerous brick and clinker/ ash fragments.	0.78		DJ			No roots observed.		0.25
				DJ					0.5
				DJ					0.75
0.9	MADE GROUND: soft, moist, brown, sandy, silty clay, with gravel and flints frequent brick fragments.	0.4		D					1.0
1.3	Stiff, orange-brown, grey veined, silty CLAY, with partings of orange and brown, silt and fine sand, claystone nodules and crystals. **(Weathered London Clay)**	3.1		D	SPT	N = 10			1.5
				D					2.0
				D					2.5
				D	SPT	N = 12			3.0
				D					3.5
				D					4.0
4.4	Stiff, grey, silty fissured CLAY, with partings of brown and grey, silt and fine sand and frequent selenite crystals. **(London Clay)**	10.6		D	SPT	N = 18			4.5
				D					5.0
				D					5.5
				D	SPT	N = 19			6.0

Drawn by: DB **Approved by:** ME

Remarks:

CONTINUED ON SHEET 2 OF 2

Key: T.D.T.D. Too Dense to Drive
D Small Disturbed Sample J Jar Sample
B Bulk Disturbed Sample V Pilcon Vane (kPa)
U Undisturbed Sample (U100) M Mackintosh Probe
W Water Sample N Standard Penetration Test Blow Count

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Client: Rinse & Repeat Ltd	**Scale:** N.T.S.	**Sheet No:** 2 of 2	**Weather:** Sunny	**Date:** 24.4.13
Site: 7 St Pancras Way, Kings Cross, London NW9	**Job No:** 3705	**Borehole No:** 1	**Boring method:** GEO 205 (150mm Ø) C.F.A.	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
				D					7.0
					SPT	N = 22			7.5
				D					8.0
				D	SPT	N = 25			9.0
				D					10.0
					SPT	N = 26			10.5
				D					11.0
				D	SPT	N = 28			12.0
				D					13.0
	.....becoming very stiff from 13.5m.				SPT	N = 30			13.5
				D					14.0
15.0	Borehole ends at 15.0m			D	SPT	N = 32			15.0

Drawn by: DB **Approved by:** ME

Remarks: Borehole dry and open on completion.
Standpipe installed to 8.0m.

Key: T.D.T.D. Too Dense to Drive
D Small Disturbed Sample J Jar Sample
B Bulk Disturbed Sample V Pilcon Vane (kPa)
U Undisturbed Sample (U100) M Mackintosh Probe
W Water Sample N Standard Penetration Test Blow Count

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Client: Rinse & Repeat Ltd	**Scale:** N.T.S.	**Sheet No:** 1 of 2	**Weather:** Internal	**Date:** 25.4.13
Site: 7 St Pancras Way, Kings Cross, London NW9	**Job No:** 3705	**Borehole No:** 2	**Boring method:** GEO 205 (150mm Ø) C.F.A.	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
F.L.	GRANITE COBBLE STONES (100mm) over CONCRETE (150mm)	0.25							
0.25	MADE GROUND: medium compact, dark brown, gravelly, sandy silt/silty sand, with flints and frequent brick, clinker/ash and concrete fragments.	0.15		DJ			No roots observed.		0.25
0.4	MADE GROUND: soft, moist, dark brown, gravelly, sandy, silty clay, with flints and clinker fragments.	0.3		DJ					0.5
0.7	MADE GROUND: soft, moist, brown, gravelly, silty clay, with flint, brick and clinker fragments.	0.7		DJ D	M	02 04 04 06		*0.7*	0.75 1.0
1.4	MADE GROUND: medium compact, moist, brown, stained grey, silty clay, with gravel, flint, brick and clinker fragments.	0.9		D D	M	06 08 11 13			1.5 2.0
2.3	MADE GROUND: medium compact, brown, silty clay, with occasional gravel, flint and brick fragments.	0.5		D					2.5
2.8	Stiff, brown, stained grey, silty CLAY, with partings of orange and brown, silt and fine sand and occasional gravel. **(Weathered london Clay)**	0.5		D	V	84 88			3.0
3.3	Stiff, brown, grey veined, silty CLAY, with partings of orange and brown, silt and fine sand, claystone nodules and crystals. **(Weathered London Clay)**	2.5		D D D D D	V V	110 116 122 128			3.5 4.0 4.5 5.0 5.5
5.8				D	V	140+ 140+			6.0

Drawn by: DB **Approved by:** ME

Remarks: *Groundwater 'seepage' at 0.7m.*

CONTINUED ON SHEET 2 OF 2

Key: T.D.T.D. Too Dense to Drive
D Small Disturbed Sample J Jar Sample
B Bulk Disturbed Sample V Pilcon Vane (kPa)
U Undisturbed Sample (U100) M Mackintosh Probe
W Water Sample N Standard Penetration Test Blow Count

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Client: Rinse & Repeat Ltd	**Scale:** N.T.S.	**Sheet No:** 2 of 2	**Weather:** Sunny	**Date:** 24.4.13
Site: 7 St Pancras Way, Kings Cross, London NW9	**Job No:** 3705	**Borehole No:** 2	**Boring method:** GEO 205 (150mm Ø) C.F.A.	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
	Very stiff, grey, fissured silty CLAY, with partings of orange, brown and grey, silt and fine sand and frequent selenite crystals. **(London Clay)**	9.2		D	V	140+ 140+			7.0
				D	V	140+ 140+			8.0
	.....becoming dark grey from 8.8m.							*8.8*	
				D	V	140+ 140+			9.0
				D	V	140+ 140+			10.0
				D	V	140+ 140+			11.0
				D	V	140+ 140+			12.0
				D	V	140+ 140+			13.0
				D	V	140+ 140+			14.0
15.0	Borehole ends at 15.0m			D	V	140+ 140+			15.0

Drawn by: DB **Approved by:** ME

Remarks: *Groundwater 'seepage' at 8.8m.*
Borehole moist at base and open on completion.
Standpipe installed to 8.0m.

Key: T.D.T.D. Too Dense to Drive
D Small Disturbed Sample J Jar Sample
B Bulk Disturbed Sample V Pilcon Vane (kPa)
U Undisturbed Sample (U100) M Mackintosh Probe
W Water Sample N Standard Penetration Test Blow Count