

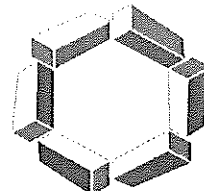


Tel: 01245 401333

Fax: 01245 401111

Email: sales@cannonpiling.com

Address: Southend Road, Rettendon Common, Chelmsford, Essex, CM3 8DZ



constructionline
UK REGISTER OF QUALIFIED CONSTRUCTION SERVICES



Hallmark Estates Ltd.,
46, Great Marlborough Street,
London,
W1F 7JW

Date: 18-October-2012

Our Ref: 1480 / 9767
Your Ref:

For the attention of: Simon Hikmet

Dear Sirs

Re: 29 Chalk Farm Road, Camden.

Please find enclosed the following:-

- Pile design
- SI Summary
- CIS details
- Insurance Schedules - Liability and Professional Indemnity.
- Method Statements / Risk Assessments
- Rig details.

We trust that you find them satisfactory and ask that you forward them onto all interested parties.

Yours Sincerely
for and on behalf of
Cannon Piling

C.J. Ford. BSc(Hons). CEng. MICE. MCIOB. MRICS.
Director

CANNON PILING TEL No: 01245 401333 FAX No: 01245 401111	DESIGN CALCULATION SHEET	
	CONTRACT NO: 1480	SHEET OF
	SITE ADDRESS: 29 Chalk Farm Rd	
TITLE / ELEMENT: EMBEDDED PILED RETAINING WALL		DATE: 17-Oct-12

1. SCOPE:

DESIGN OF EMBEDDED CONTIGUOUS PILED RETAINING WALL TO SINGLE LEVEL BASEMENT FOR NEW BUILD STRUCTURE.

Piles are required provide support for earth and water pressures - to act as temporary works in the short term during excavation of the box and as permanent works in the long term.

2. SEQUENCE OF CONSTRUCTION:

The following sequence of operations is assumed in the design of the embedded retaining wall and must be followed for the construction of the basement.

1. Piles constructed from piling mat set at top of capping beam which = EGL and allowed to cure for min 7 days
2. Basement box excavated to -0.6M BEGL
3. Piles broken down, and capping beam installed - designed by others to resist any propping forces. A capping beam is an essential part of any piled retaining structure and must be constructed before excavation of the box, in order to ensure that the piles act together as a structural unit.
4. Bulk excavation carried out to bottom of blinding level and formation immediately sealed with concrete blinding to ensure that the sub grade cannot be softened by the action of surface water - great care taken to ensure no over excavation.
5. Basement slab constructed - to act as prop in the permanent condition and designed by others to resist propping forces. **NOTE:** this slab must be completed within six months of the start of the excavation. If the excavation is left open for more than six months without the basement slab acting as a prop temporary props will be required and the Builder must contact Cannon Piling for details.
6. Ground floor slab constructed - to act as prop in the permanent condition and designed by others to resist propping forces. **NOTE:** this slab must be completed within six months of the start of the excavation. If the piles are left for more than six months without the ground floor slab being constructed to act as a prop temporary props will be required and the Builder must contact Cannon Piling for details.

The Design will be carried out in accordance with CIRIA C580 - Design Approach A with Moderately Conservative Soil parameters

3. REFERENCE DOCUMENTS:

CIRIA R104 - DESIGN OF RETAINING WALLS EMBEDDED IN STIFF CLAY

CIRIA C580 - EMBEDDED RETAINING WALLS guidance for economic design

BS 8002, 8110, 8102

SOILS INVESTIGATION: Arcadis 937100603_02, Sept 2011 & 937100710_03, Feb 2012

CONTRACT DRAWINGS: Pringeur-James L1078 006 Rev0

4. STRATA:

FROM SOILS INVESTIGATION - MODERATELY CONSERVATIVE SOIL PARAMETERS:

	sat density	SHORT TERM TOTAL STRESS TEMPORARY CONDITION	LONG TERM EFFECTIVE STRESS PERMANENT CONDITION
0 to -1.35m : Clay Fill	20	E = 12800	c' = 0, ϕ' = 24°
-1.35m to depth : London Clay (Silty Clay)	19.5	E = 16000, Cu = 30+7z	c' = 0, ϕ' = 20°

GROUNDWATER: AT -2.5m BELOW EGL

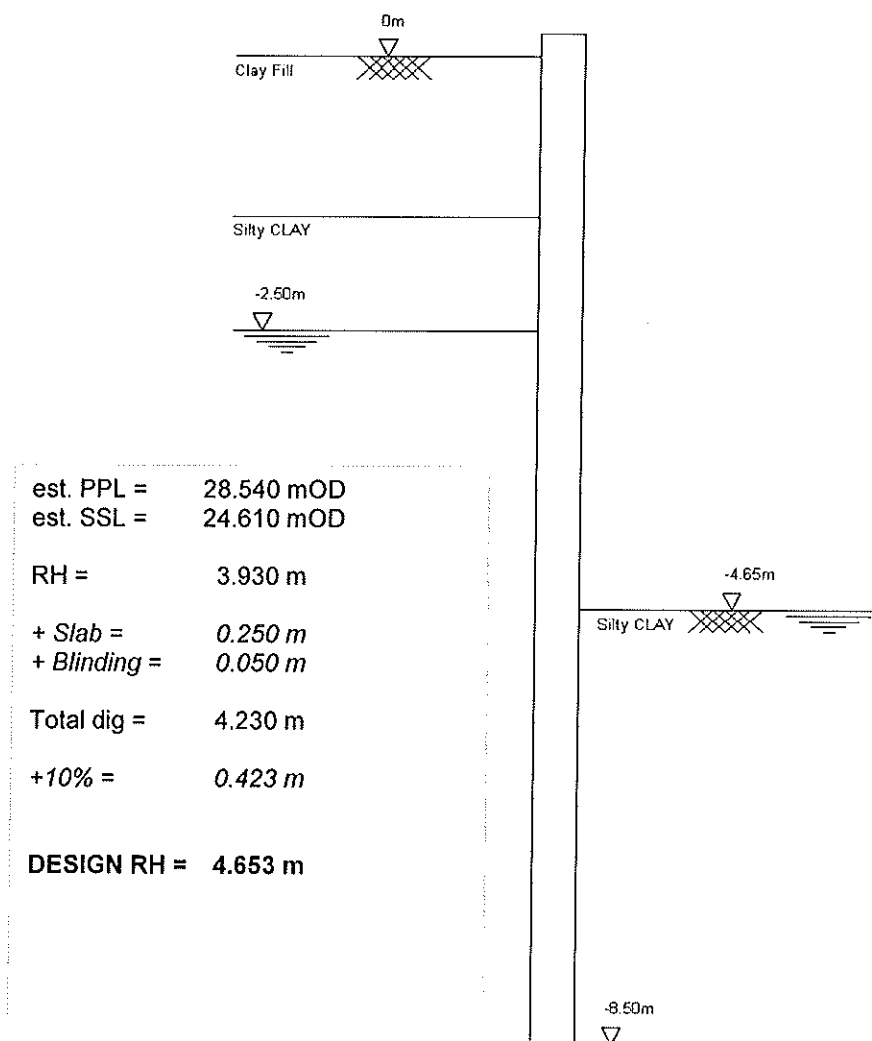
CANNON PILING TEL No: 01245 401333 FAX No: 01245 401111	DESIGN CALCULATION SHEET	
	CONTRACT NO: 1480	SHEET OF
	SITE ADDRESS: 29 Chalk Farm Rd	
TITLE / ELEMENT: EMBEDDED PILED RETAINING WALL		DATE: 17-Oct-12

5. SURCHARGES AND LOADS: (BS8002 MIN LONG TERM S/C = 10KN/M²)
(CIRIA C580 S/C FOR SLS SHORT TERM CONDITION TO ENGINEER'S DISCRETION)

Hydrostatic pressure: as per Engineers drawing
Surcharges: 20kN/M², as per Engineers drawing

6. GEOMETRY: (Refer to CIRIA C580 section 5.7 - for ULS calculations accidental over excavation as BS8002 10% wall height or min 0.5m. For SLS calculations can be ignored or to designers discretion)

HERE SITE READY AND EXCAVATION WILL BE IMMEDIATELY AFTER PILING. THE OPERATION WILL BE WELL CONTROLLED AND BLINDED AS THE WORKS PROCEED - THEREFORE ALLOW FOR ACCIDENTAL OVER EXCAVATION OF: 10%



CANNON PILING TEL No: 01245 401333 FAX No: 01245 401111	DESIGN CALCULATION SHEET	
	CONTRACT NO: 1480	SHEET OF
	SITE ADDRESS: 29 Chalk Farm Rd	
TITLE / ELEMENT: EMBEDDED PILED RETAINING WALL		DATE: 17-Oct-12

7. DESIGN:

The embedded retaining wall will be analysed using CADS Software - Piled Wall Suite version 5.19.
 In the Temporary Condition the software will carry out SLS analysis for embedment, moments, shears and deflections.
 In the Permanent Condition the piles will be analysed for Ultimate (ULS) moments and shears
 The software also designs the pile reinforcement to BS8110 for moments and shears derived from the analysis.

The wall will be analysed for both total stress in the short term and (where applicable) effective stress in the long term for each of the load cases and the worst case will be adopted for the wall design.

The CADS computer programme uses a limit equilibrium approach to determine the wall deflections and, in general, the application of this concept leads to an overestimate of likely wall deflections. CIRIA C580(cl 2.6.9) states that ground movements cannot be predicted accurately and recommends that case-history-based empirical methods of prediction are to be preferred to the use of complex analysis, and historic recorded deflections should be used to predict any movements that may be caused by the construction of the wall and subsequent pile deflections after excavation.

Design Criteria from Contract Drawings / Specs: (as previous)

DESIGN ASSUMPTIONS:

- 1 Piles Temporary Works in the short term and Permanent Works in the long term after excavation and propping.
- 2 Formation softening - Excavation to be well controlled and blinded with concrete as the works proceed - allow 0.5m
- 3 Tension Cracks filled with water - SHORT TERM - Allow for automatic depth calculation by software
LONG TERM - N/A
- 4 Piles Propped at : In Short Term (Temp Works): unpropped
In Long Term (Perm Works): -0.3m (GFL) and BSL
- 5 Groundwater: Short term - None (ground free draining through gaps between piles).
Long term - assumed at -1.0 BEGL in accordance with BS 8102

						STAGE EXCAVATION		
8. ANALYSIS:						STAGE REF	EXC D	PROP LEVEL
TW PW	TC	GW	CODE	S/C LOADS				
REF: 1 PPL @ 28.54mOD	TW	-	-	R104	20kN/M ² active surcharge & Hydrostatic pressure	3	-4.65	-
REF: 2 PPL @ 28.54mOD	PW	-	-1 act.	C580	20kN/M ² active surcharge & Hydrostatic pressure	2 3 5	- - -3.93	-0.3 -3.93 -

9. FROM CADS OUTPUTS (SEE ATTACHED):

REF	TOE LEVEL	DEPTH FROM PPL	BM	SF	pile dia & spacing	PROP forces		CAGE
						depth M	KN/M (SLS)	
1	8.5 *	8.5 *	169.0	234.0	350mm @ 450ccs	-	-	6H25x8.5m H10, 350mmOD, 150mm pitch
2	- *	- *	57.8	81.9	350mm @ 450ccs	0.3 3.93	50.5 101.4	6H25x8.5m H10, 350mmOD, 150mm pitch

* PLEASE REFER TO CONTIG PILE DESIGN FOR PILE EMBEDMENT

CANNON PILING TEL No: 01245 401333 FAX No: 01245 401111	DESIGN CALCULATION SHEET	
	CONTRACT NO: 1480	SHEET OF
	SITE ADDRESS: 29 Chalk Farm Rd	
TITLE / ELEMENT: EMBEDDED PILED RETAINING WALL		DATE: 17-Oct-12

10. SUMMARY:

PILE DIAMETER: 350 mm PILE SPACING: 450 mm MAX
 PILE LENGTH: 8.5 M
 CAGE: MAIN BARS: 6 No H 25
 SPIRAL: H 8 @ 150 mm PITCH COVER: 50 mm
 WEIGHT: 214 kgs DIST BETWEEN MAIN BARS 95 mm
 CONCRETE: C 35 DESIGN CLASS - DC 2

PROP FORCES (SLS):

Permanent @ GFL = 51 KN/M SLS, @ BSL = 102 KN/M SLS

	Page No 1 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

Pile geometry

Pile top Level 0 m
 Pile Length 8.5 m
 Pile toe level -8.5 m
 Active ground slope 0 Degrees (To horizontal)

Soils and ground water initial data (Soils data given for active and passive sides)

Initial Ground Water level -2.5

Top Level m	Description	Bulk Dens kN/m3	Sat' Dens kN/m3	Young Mod kN/m2	Young Inc. kN/m3	Cu C' kN/m2	C Inc. kN/m3	Phi Deg	Wall Shear Ratio	Ka Kp	Kac Kpc
.00	Clay Fill	19.00	20.00	12800	0			24 24	.50 .50	.37 3.23	
-1.35	Silty CLAY	19.50	19.50	16000	0	30 30	7.0 7.0		.50 .50	1.00 1.00	2.45 2.45

Construction sequence

Stage Ref	Stage Type	Level or Angle m/deg.	Load kN/(m)	Offset m	Width m	Length m
1	Active surcharge	0.00	20.0	.0		
2 A	Passive water level	-4.65				
3	Passive side excavation	-4.65				
4 A	Equalize water at toe					

Code of practice

Code of practice or reference document	CIRIA R104 Burland and Potts Temporary Works (Drained)
Application of pressures for stability	FOS on available passive
FOS on moments (stability check)	1.50
ULS factor on Tan(Phi) values	1.00
ULS factor on drained cohesion values	1.00
ULS factor on undrained cohesion values	1.00
ULS factor on active soil pressures	1.00
ULS factor on passive soil pressures	1.00
ULS factor on active water pressures	1.00
ULS factor on passive water pressures	1.00
ULS factor on loads applied to the soil	1.00
ULS factor on loads applied to the wall	1.00
FOS on embedment (stability check)	1.00
Correction factor on cantilever embedment	1.20

	Page No 2 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

Wall analysis detail options

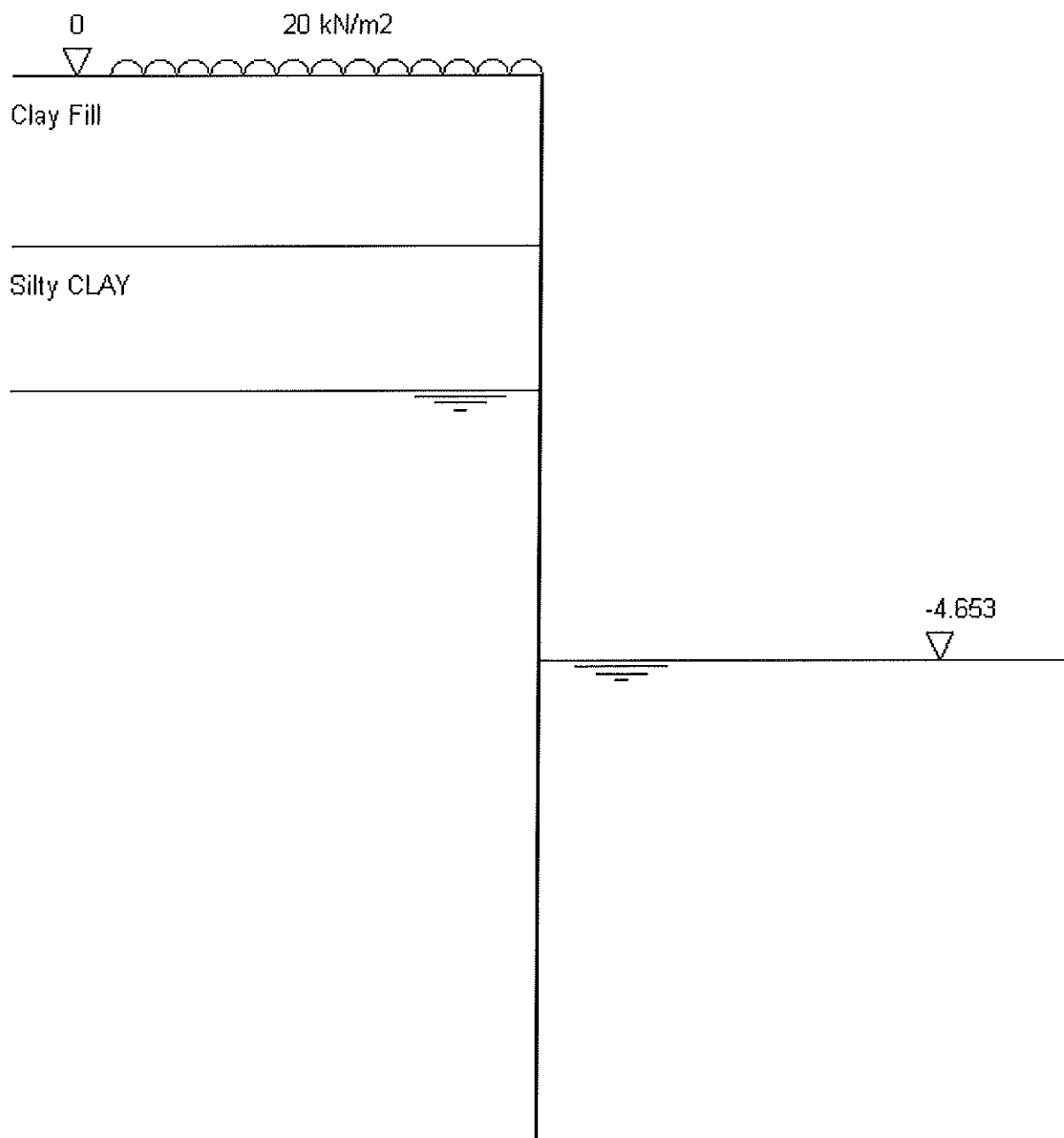
Nominal Phi for load distribution	30.0 Degrees
Depth of water filled tension cracks	.0 m
Density of water	10.0 kN/m3
Minimum equivalent fluid density	5.0 kN/m3
Depth of passive softened soil	.5 m
Continuity model for wall analysis	Pins at second and lower props

Deflection parameters

Wall moment of inertia	163693 cm4/m
Wall Youngs modulus	27000000 kN/m2

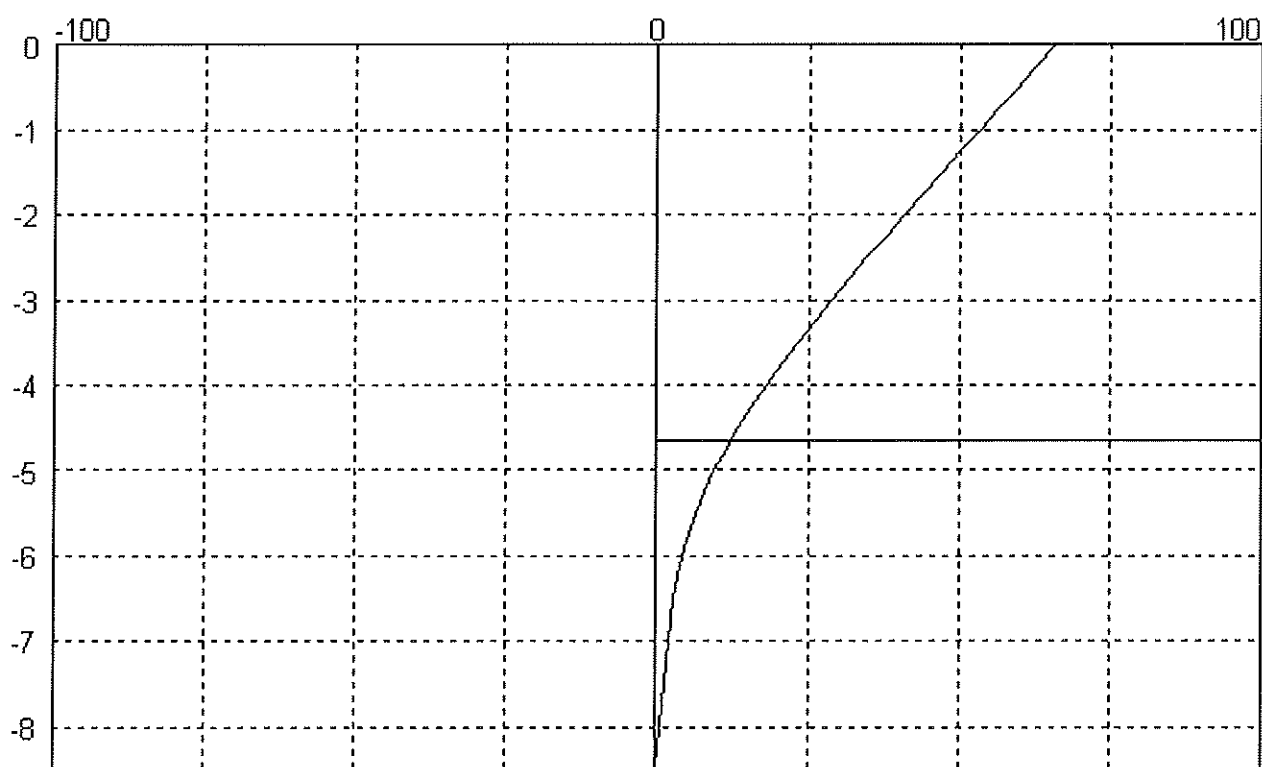
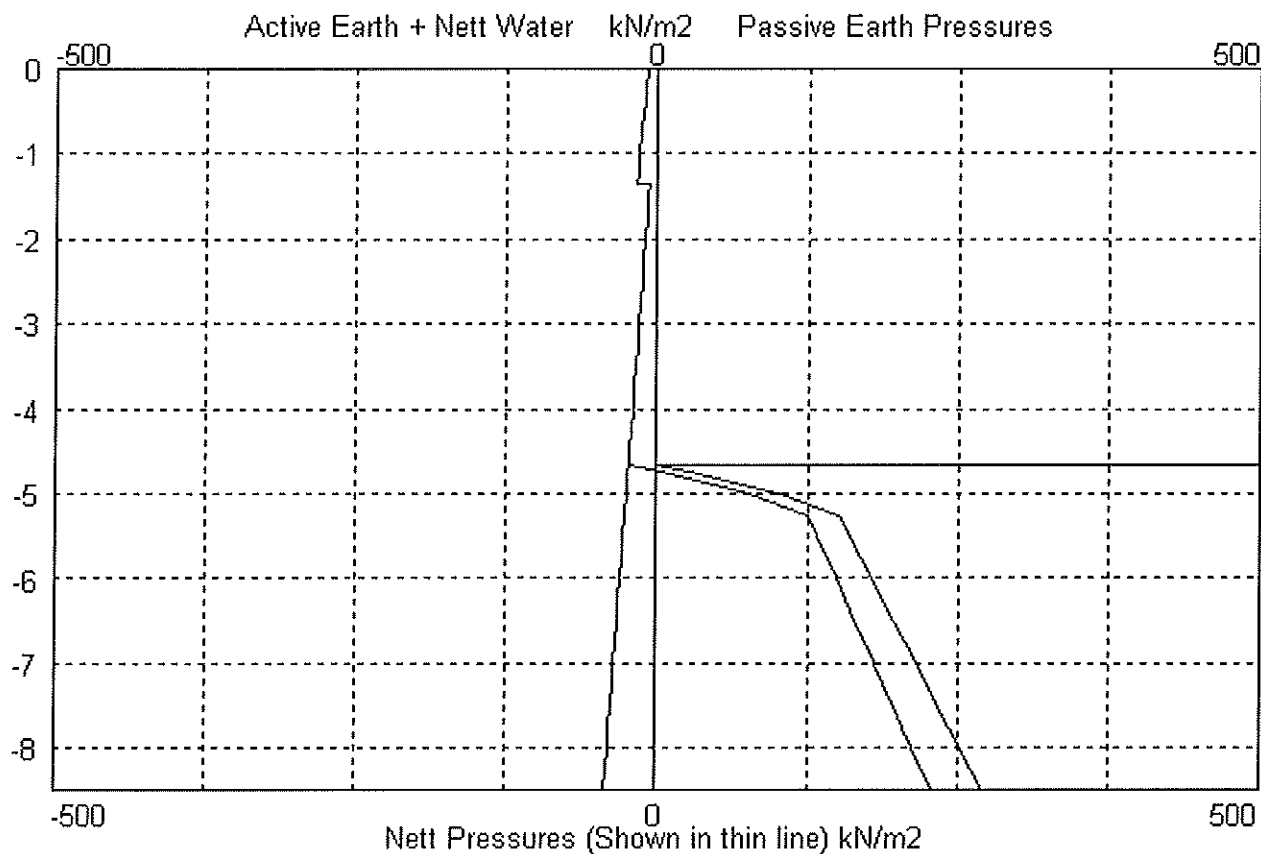
	Page No 3 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

Stage ref. 4
Stage type Equalize water at toe



	Page No 4 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

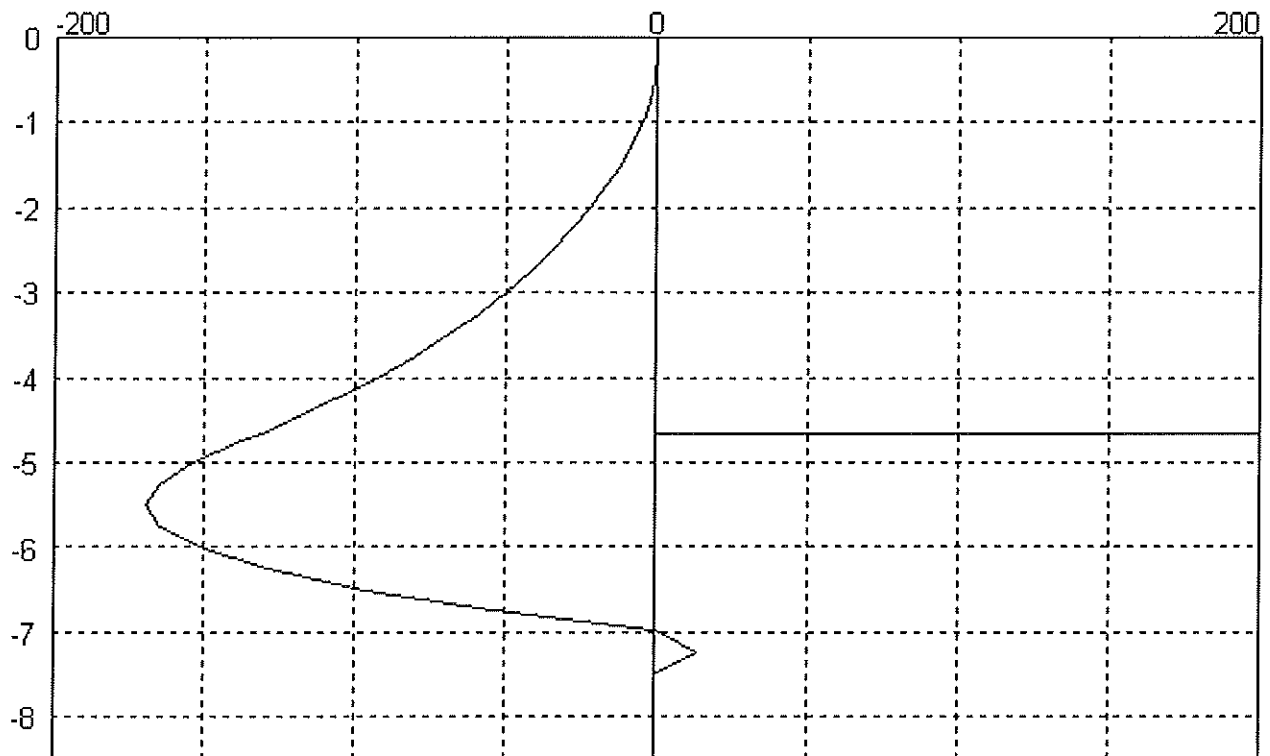
Graphical results from analysis of stage ref 4



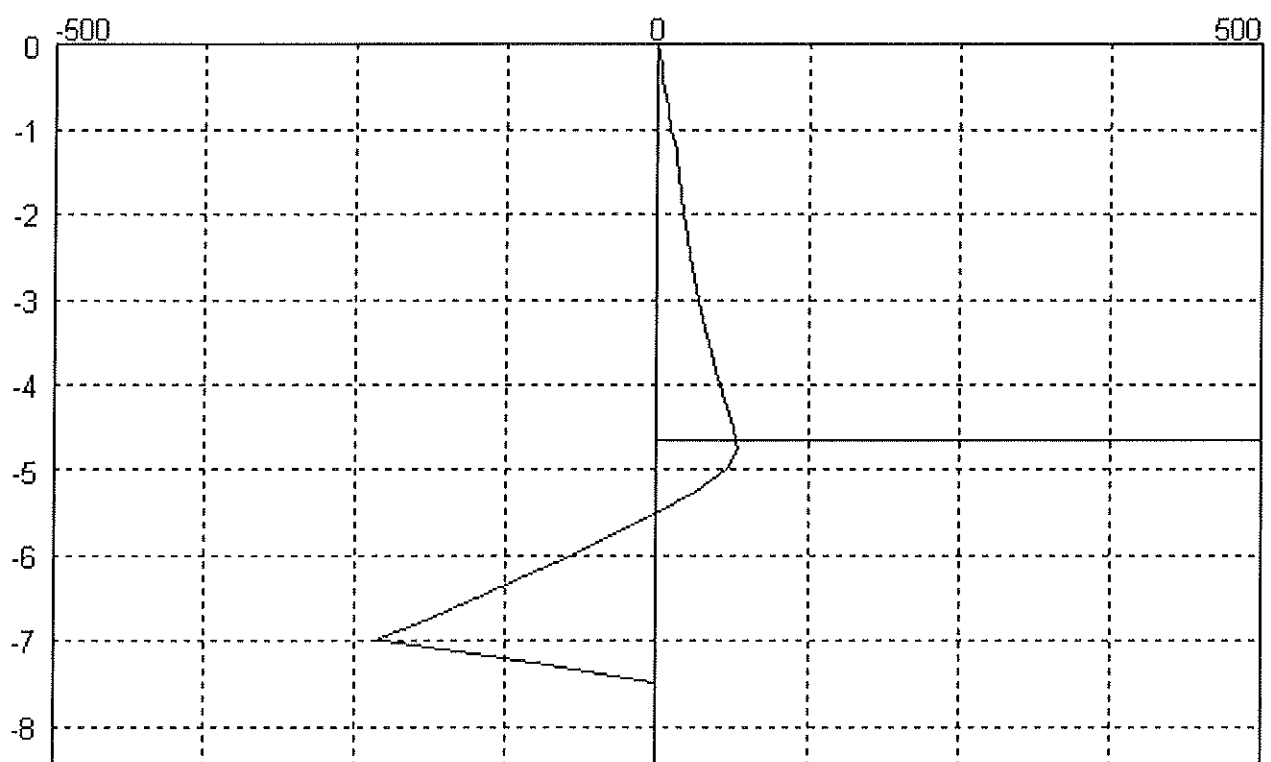
Deflection diagram (mm)

	Page No 5 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

Graphical results from analysis of stage ref 4 continued



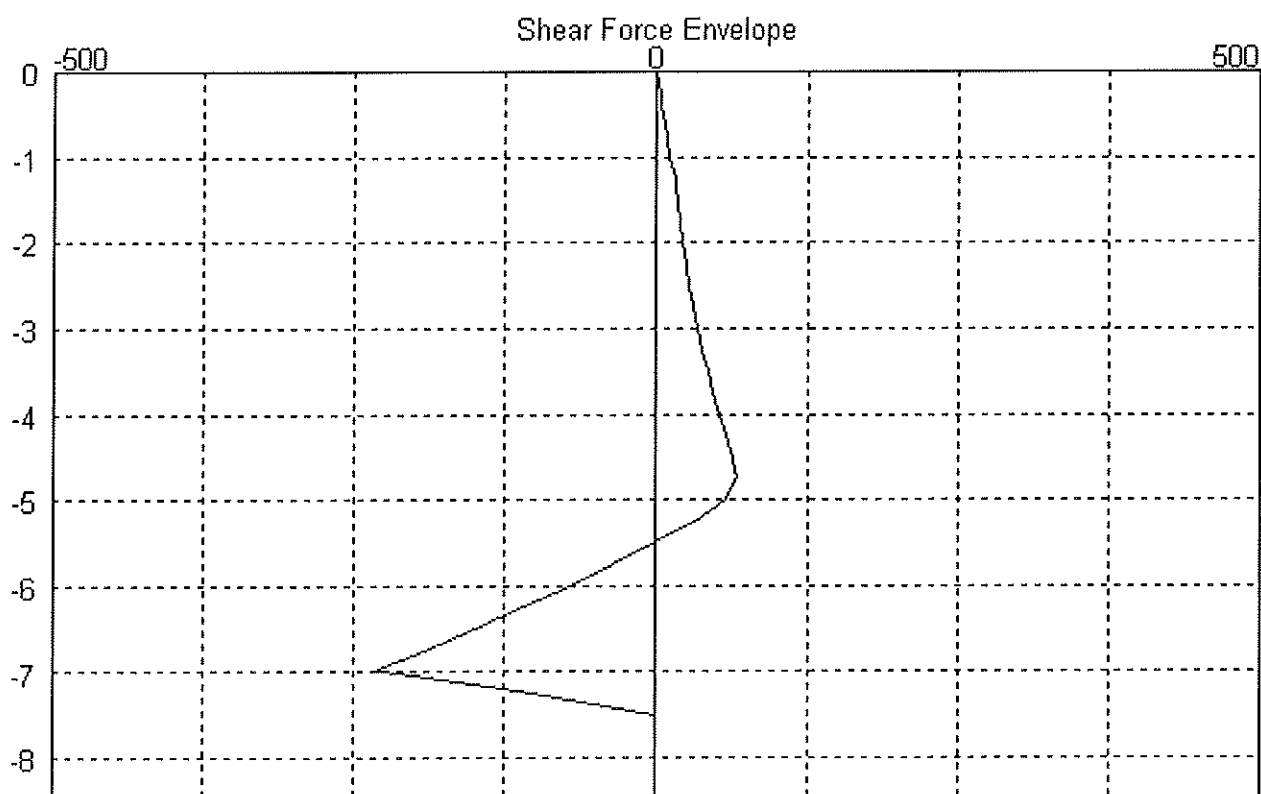
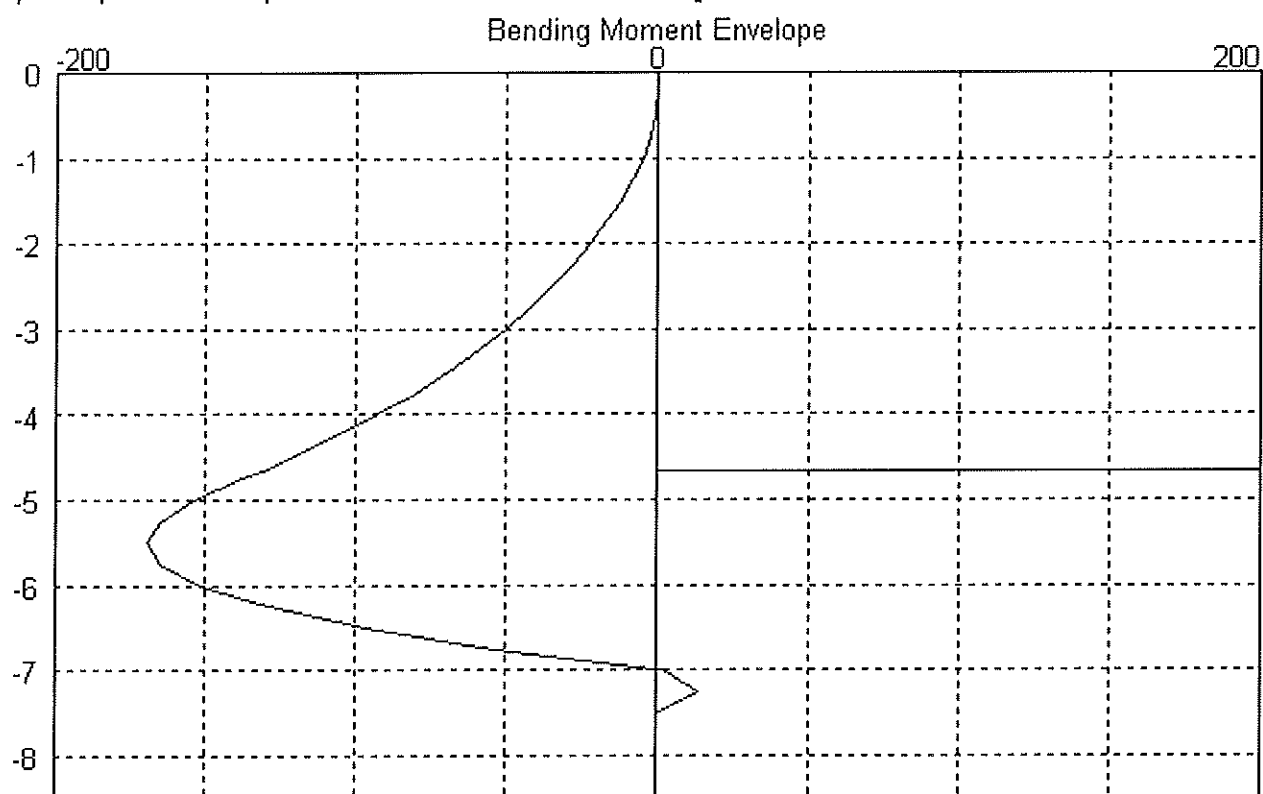
Bending Moment Diagram (kNm/m)



Shear Force Diagram (kN/m)

	Page No 6 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

Graphical plot of envelope from selected construction stages



	Page No 7 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

Table of envelope for wall forces

Calc Level m	Bending Minimum kNm/m	Bending Maximum kNm/m	Shear Minimum kN/m	Shear Maximum kN/m	Prop Force kN/m
.00	.0	.0	.0	.0	
.00	.0	.0	.0	.0	
-.25	.0	.3	-2.1	.0	
-.42	.0	.7	-3.7	1.6	
-.50	.0	1.1	-4.6	.0	
-.75	.0	2.6	-7.6	.0	
-1.00	.0	4.9	-11.0	.0	
-1.25	.0	8.2	-14.9	.0	
-1.35	.0	9.7	-16.6	.0	
-1.35	.0	9.7	-16.6	.0	
-1.50	.0	12.3	-17.6	.0	
-1.75	.0	17.0	-19.7	.0	
-2.00	.0	22.2	-22.0	.0	
-2.25	.0	28.0	-24.7	.0	
-2.50	.0	34.5	-27.6	.0	
-2.75	.0	41.8	-30.9	.0	
-3.00	.0	50.0	-34.5	.0	
-3.25	.0	59.1	-38.4	.0	
-3.50	.0	69.2	-42.6	.0	
-3.75	.0	80.5	-47.2	.0	
-4.00	.0	92.8	-52.0	.0	
-4.25	.0	106.5	-57.2	.0	
-4.50	.0	121.5	-62.6	.0	
-4.65	.0	131.2	-66.1	.0	
-4.65	.0	131.3	-66.1	.0	
-4.75	.0	137.8	-67.1	.0	
-5.00	.0	153.7	-57.1	.0	
-5.25	.0	165.1	-31.9	.0	
-5.50	.0	169.0	.0	.6	
-5.75	.0	164.6	.0	35.0	
-6.00	.0	151.4	.0	71.4	
-6.25	.0	128.8	.0	109.7	
-6.50	.0	96.3	.0	150.1	
-6.75	.0	53.6	.0	192.4	
-6.99	.0	.0	.0	234.0	
-7.00	-1.7	.0	.0	226.5	
-7.25	-13.4	.0	.0	101.1	
-7.50	.0	.0	.0	.0	
-7.75	.0	.0	.0	.0	
-8.00	.0	.0	.0	.0	
-8.25	.0	.0	.0	.0	
-8.50	.0	.0	.0	.0	

	Page No 8 Analysis 1
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name tw analysis 1.pws
29 Chalk Farm Road Temp works - unpropped	Engineer CO Date 17/10/2012

Structural design of wall

Wall section properties

Primary pile diameter	350 mm
Primary pile spacing	450 mm
Infill pile diameter	mm
Main rebar bar diameter	25 mm
Main rebar number of bars	6
Links/Helix bar diameter	10 mm
Links/Helix spacing/pitch	150 mm

Wall material properties

Concrete cube strength	35 N/mm ²
Concrete cover	50 mm
Main rebar steel grade	500 N/mm ²
Link rebar steel grade	500 N/mm ²
Ultimate load factor	1.35

Wall structural design checks

Check description	Required or Limit	Provided or Actual	Units
Max. ultimate moment BS8110, Ultimate resistance	102	108	kNm
Maximum longitudinal steel BS8110, Max 6% by area	5772	2945	mm ²
Minimum longitudinal steel BS8110, Min 0.4% by area	384	2945	mm ²
Maximum ultimate shear BS8110 Ultimate resistance	142	174	kN
Minimum link diameter BS8110, 6mm or 0.25x bar dia	6	10	mm
Max. link spacing/pitch BS8110, 12x main bar dia or 0.75d	182	150	mm
Minimum shear link area BS8110, Clause 3.4.5	737	1047	mm ² /m

	Page No 1 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

Pile geometry

Pile top Level 0 m
 Pile Length 4.23 m
 Pile toe level -4.23 m
 Active ground slope 0 Degrees (To horizontal)

Soils and ground water initial data (Soils data given for active and passive sides)

Initial Ground Water level -2.5

Top Level m	Description	Bulk Dens kN/m3	Sat' Dens kN/m3	Young Mod kN/m2	Young Inc. kN/m3	Cu C' kN/m2	C Inc. kN/m3	Phi Deg	Wall Shear Ratio	Ka Kp	Kac Kpc
.00	Clay Fill	19.00	20.00	12800	0			24 24	.50 .50	.37 3.23	
-1.35	Silty CLAY	19.50	19.50	16000	0			20 20	.50 .50	.44 2.56	

Construction sequence

Stage Ref	Stage Type	Level or Angle m/deg.	Load kN/(m)	Offset m	Width m	Length m
1 A	Active surcharge	0.00	20.0	.0		
2 A	Insert prop	-0.30				
3	Insert prop	-3.93				
4 A	Passive water level	-4.23				
5	Passive side excavation	-3.93				
6 A	Active water level	-1.00				
7 A	Equalize water at toe					

Code of practice

Code of practice or reference document	Ciria C580 ULS - Moderately conservative parameters
Application of pressures for stability	Not applicable for FOS=1 on moments
FOS on moments (stability check)	1.00
ULS factor on Tan(Phi) values	1.20
ULS fFactor on drained cohesion values	1.20
ULS factor on undrained cohesion values	1.50
ULS factor on active soil pressures	1.00
ULS factor on passive soil pressures	1.00
ULS factor on active water pressures	1.00
ULS factor on passive water pressures	1.00
ULS factor on loads applied to the soil	1.00
ULS factor on loads applied to the wall	1.00
FOS on embedment (stability check)	1.00
Correction factor on cantilever embedment	1.20

	Page No 2 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

Wall analysis detail options

Nominal Phi for load distribution	30.0 Degrees
Depth of water filled tension cracks	.0 m
Density of water	10.0 kN/m3
Minimum equivalent fluid density	5.0 kN/m3
Depth of passive softened soil	.5 m
Continuity model for wall analysis	Continuous over props

Deflection parameters

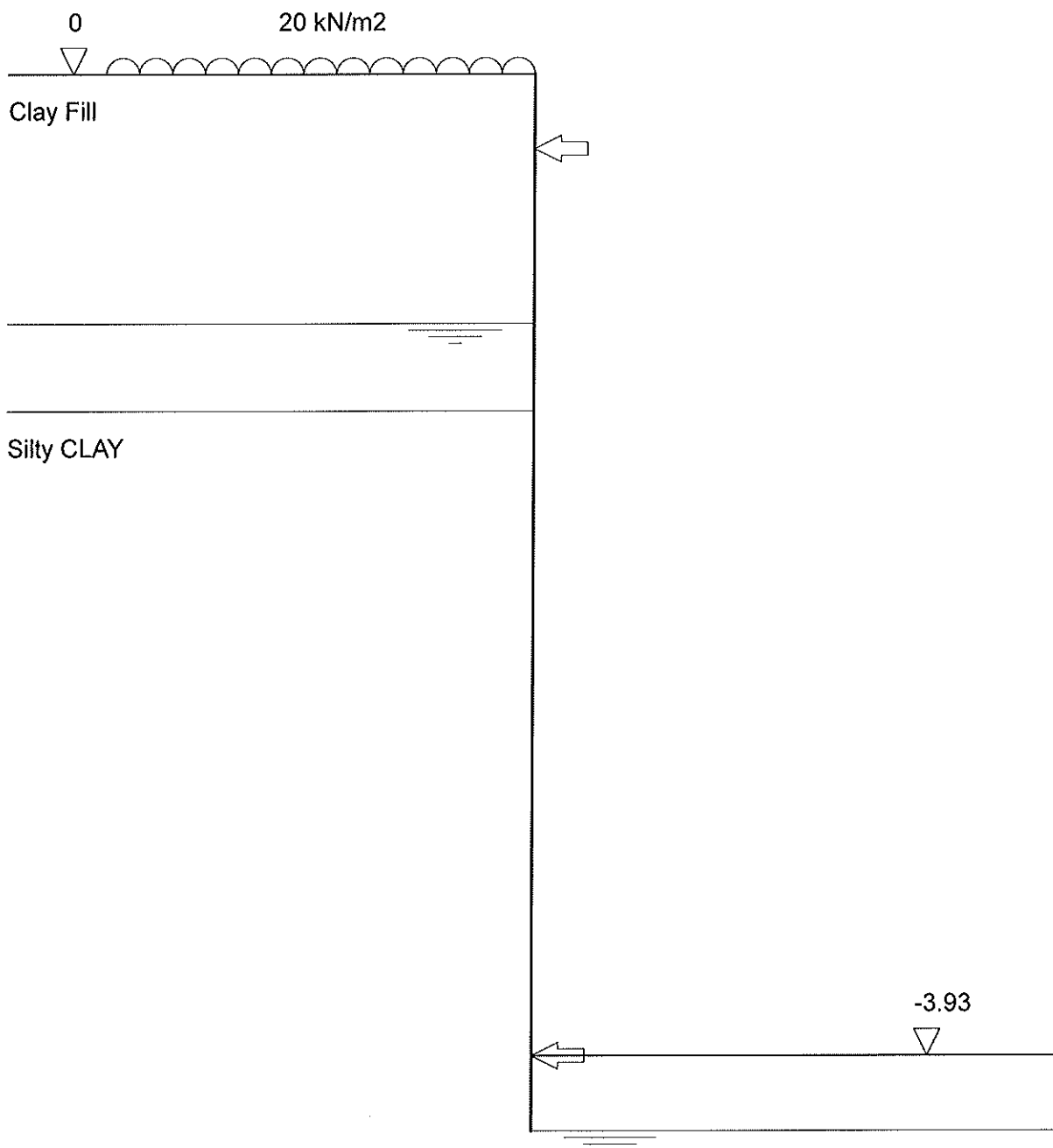
Wall moment of inertia	163693 cm4/m
Wall Youngs modulus	27000000 kN/m2

Properties for prop at -0.3	
Prop/Tie cross sectional area	200 cm2 each
Prop/Tie Youngs modulus	210000000 kN/m2
Prop/Tie length	10.0 m
Prop/Tie spacing	6.0 m
Waling moment of inertia	Waling deflection not included
Waling Youngs modulus	Waling deflection not included
Prop/Tie preload	0 kN
Initial lack of fit	0.0 mm

Properties for prop at -3.93	
Prop/Tie cross sectional area	200 cm2 each
Prop/Tie Youngs modulus	210000000 kN/m2
Prop/Tie length	10.0 m
Prop/Tie spacing	6.0 m
Waling moment of inertia	Waling deflection not included
Waling Youngs modulus	Waling deflection not included
Prop/Tie preload	0 kN
Initial lack of fit	0.0 mm

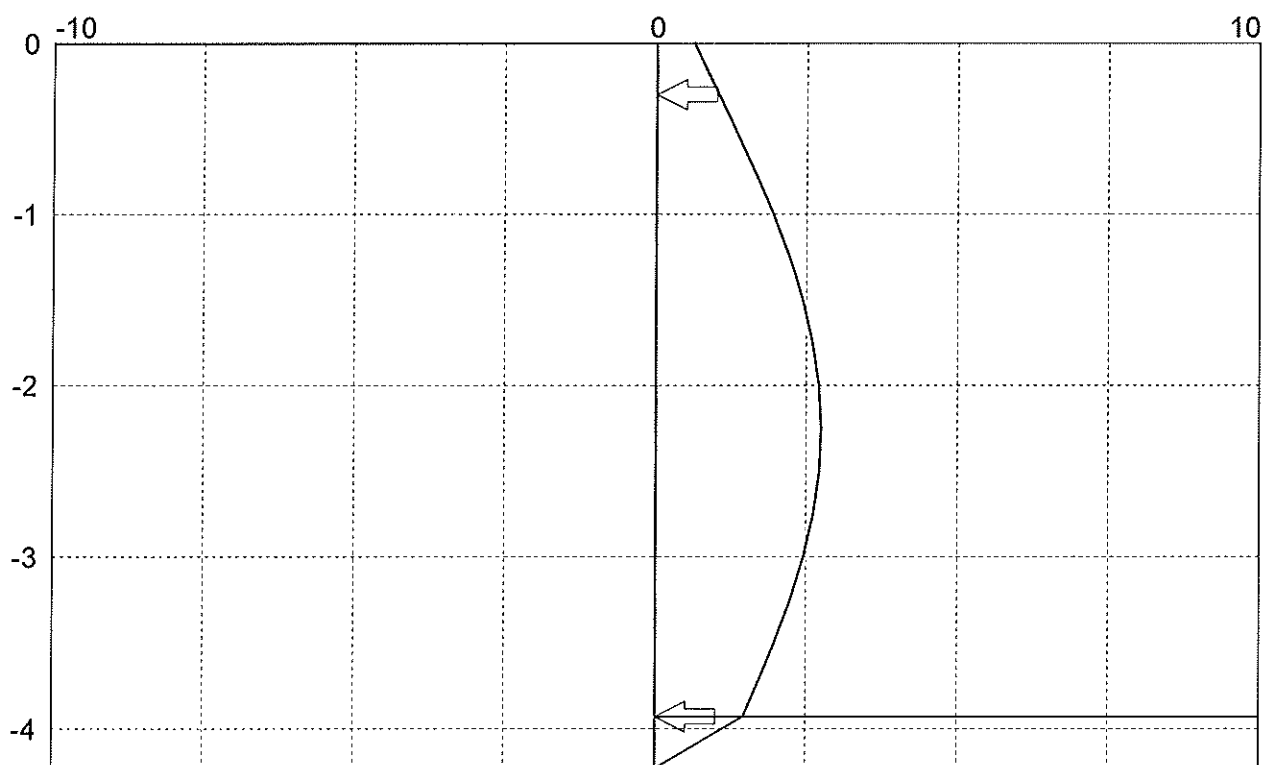
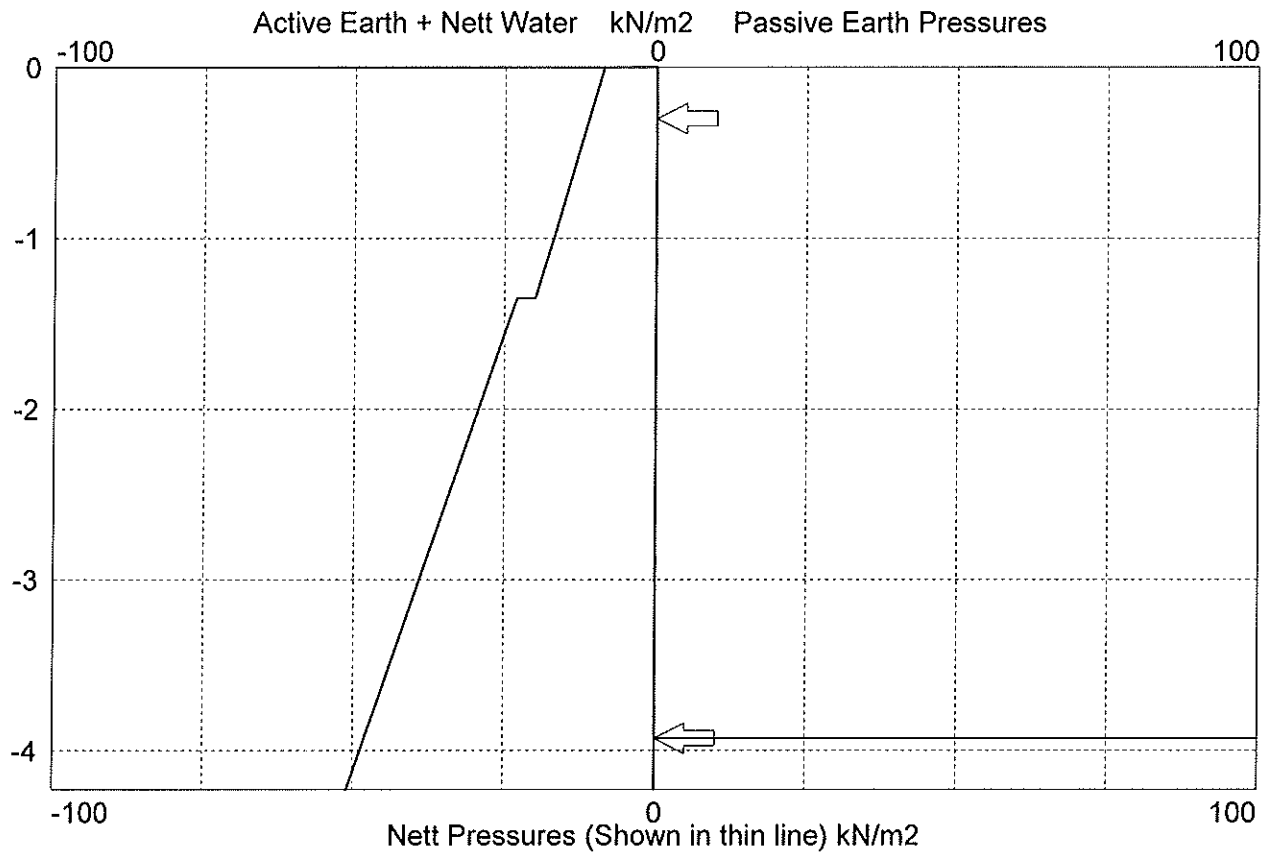
	Page No 3 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

Stage ref. 7
Stage type Equalize water at toe



	Page No 4 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

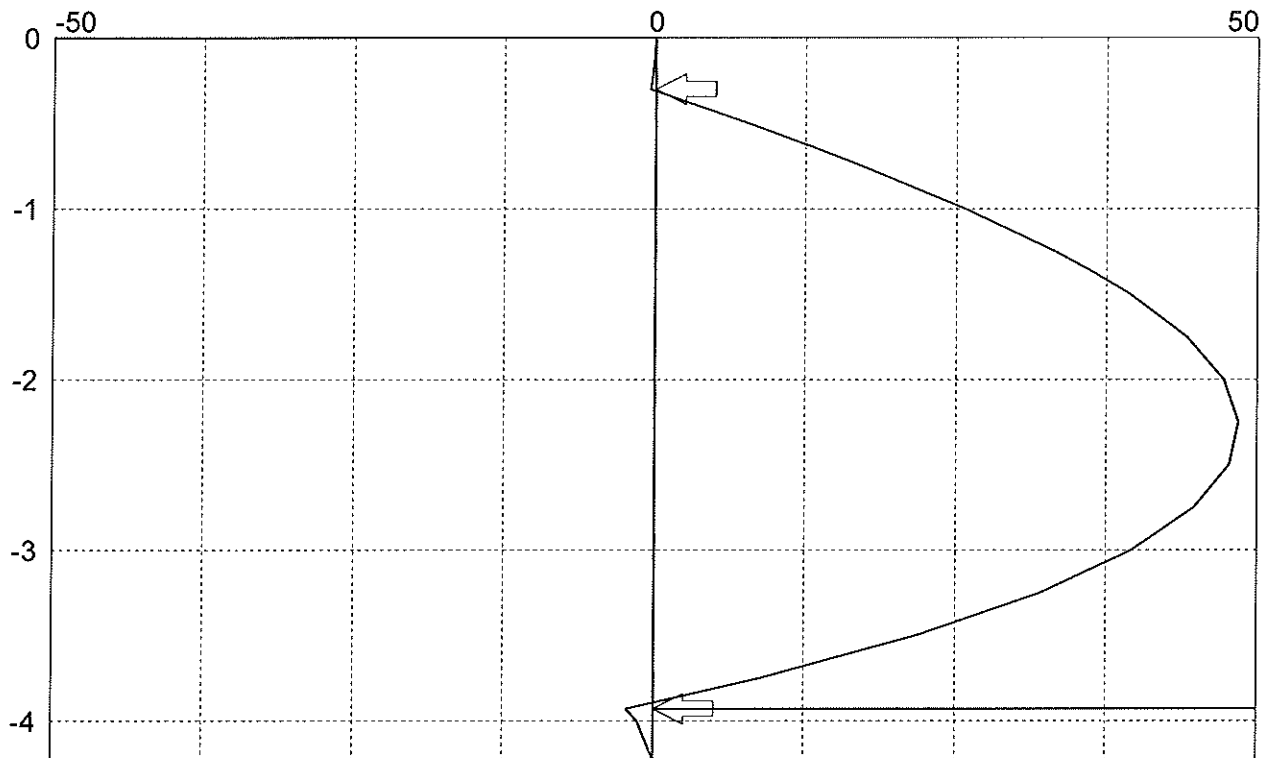
Graphical results from analysis of stage ref 7



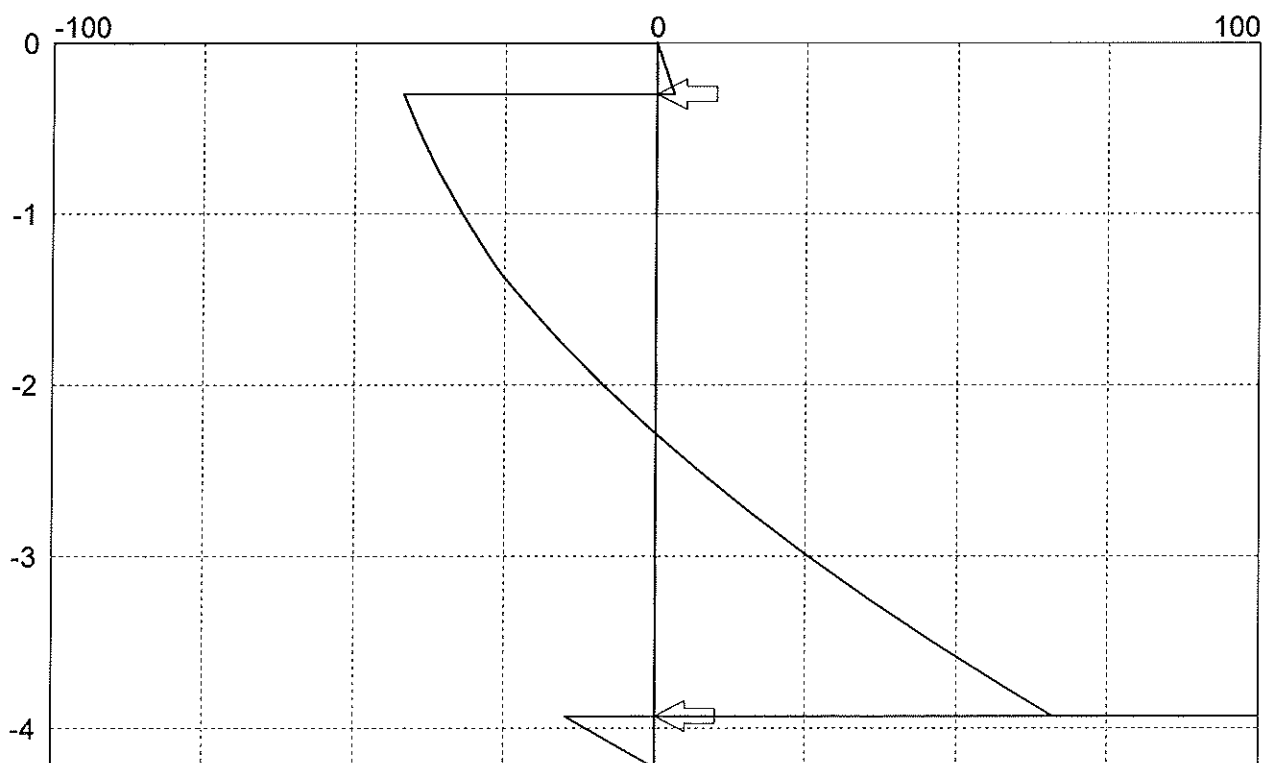
Deflection diagram (mm)

	Page No 5 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

Graphical results from analysis of stage ref 7 continued



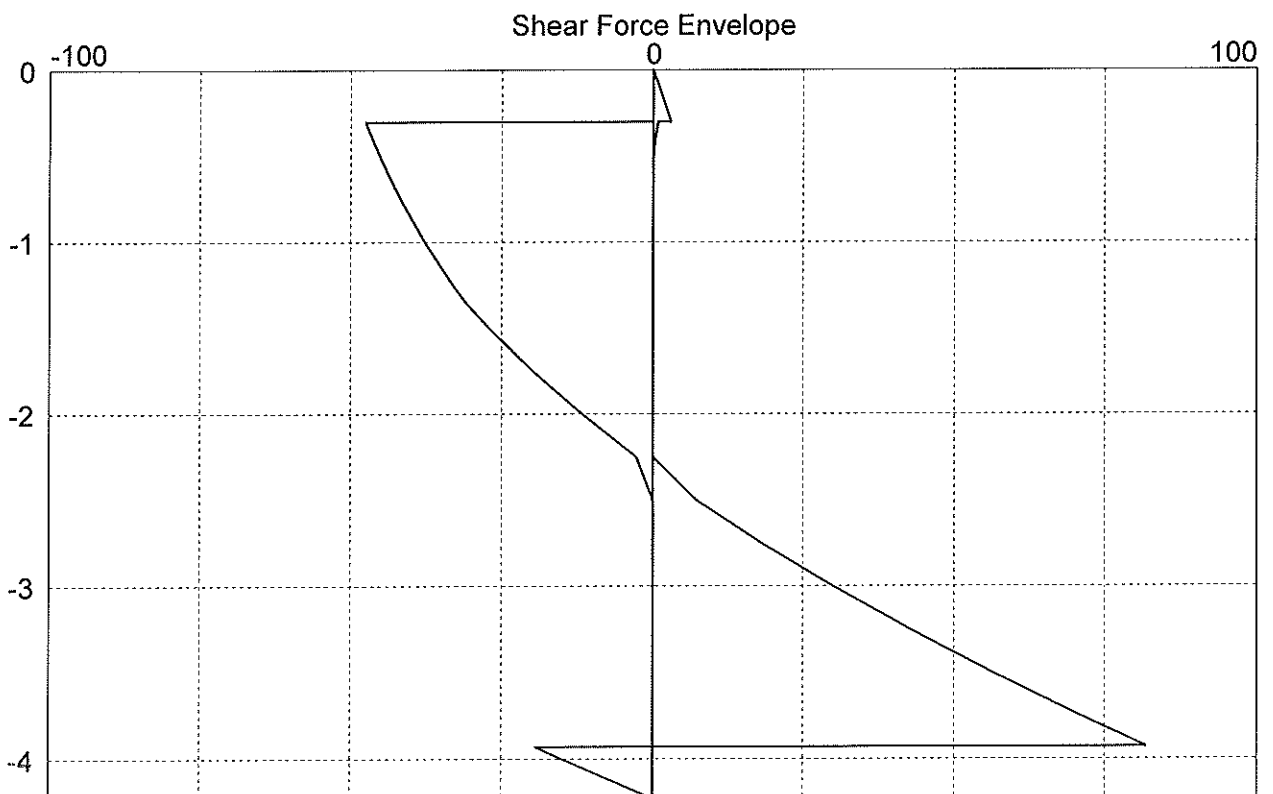
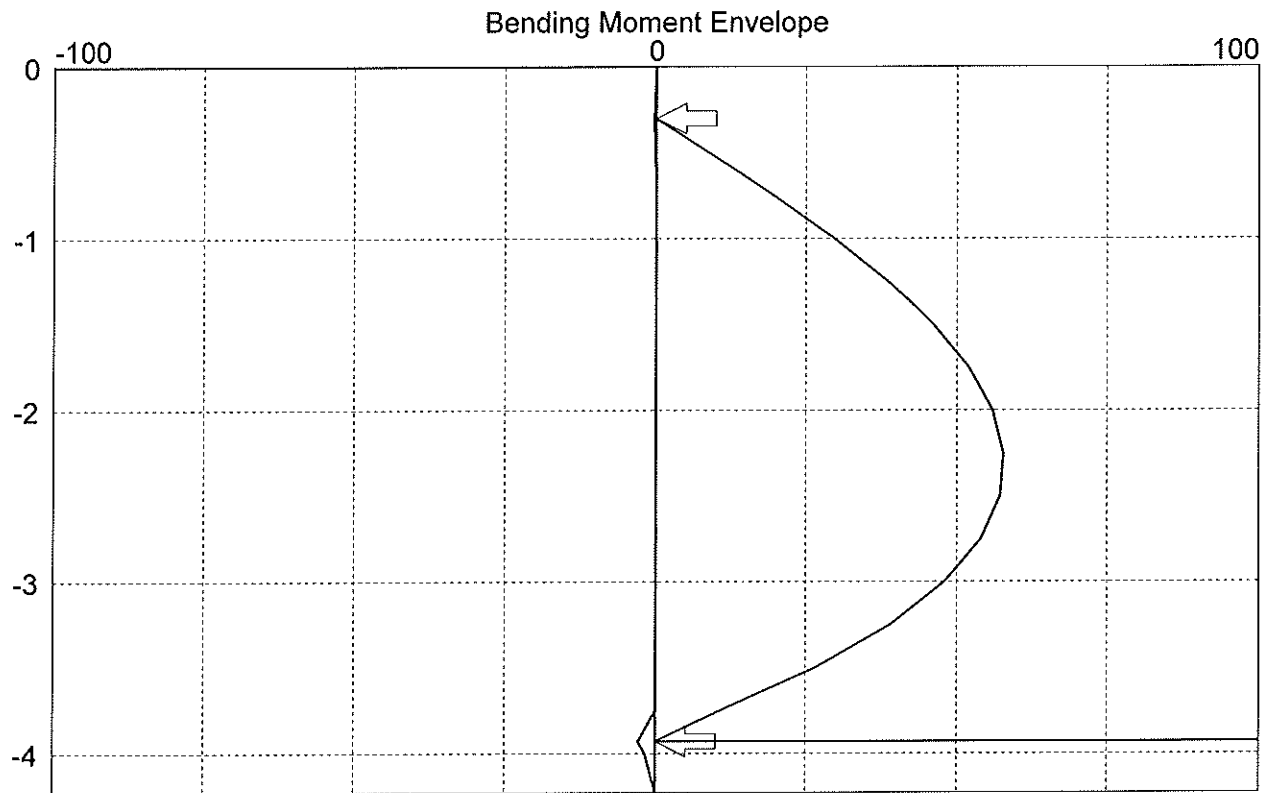
Bending Moment Diagram (kNm/m)



Shear Force Diagram (kN/m)

	Page No 6 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

Graphical plot of envelope from selected construction stages



	Page No 7 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

Table of envelope for wall forces

Calc Level m	Bending Minimum kNm/m	Bending Maximum kNm/m	Shear Minimum kN/m	Shear Maximum kN/m	Prop Force kN/m
.00	.0	.0	.0	.0	
.00	.0	.0	.0	.0	
-.25	.0	.3	-2.4	.0	
-.30	.0	.4	-3.0	.0	50.5
-.30	.0	.4	-.7	47.6	
-.50	-8.8	.2	.0	45.2	
-.63	-14.6	.0	.0	43.4	
-.75	-19.7	.0	.0	41.7	
-1.00	-29.6	.0	.0	37.7	
-1.25	-38.5	.0	.0	33.1	
-1.35	-41.7	.0	.0	30.9	
-1.35	-41.8	.0	.0	30.9	
-1.50	-46.1	.0	.0	27.1	
-1.75	-52.0	.0	.0	19.9	
-2.00	-55.9	.0	.0	11.8	
-2.25	-57.8	.0	.0	2.7	
-2.50	-57.2	.0	-7.2	.0	
-2.75	-54.1	.0	-18.1	.0	
-3.00	-48.1	.0	-29.9	.0	
-3.25	-39.0	.0	-42.6	.0	
-3.50	-26.7	.0	-56.3	.0	
-3.75	-10.8	.0	-70.9	.0	
-3.93	.0	2.8	-81.8	.0	
-3.93	.0	2.9	-81.9	.0	101.4
-3.93	.0	3.0	.0	19.5	
-4.00	.0	1.7	.0	15.1	
-4.23	.0	.0	.0	.0	

	Page No 8 Analysis 2
CADS Piled Wall Suite Version 5.19 Design of embedded retaining walls and cofferdams	Project 1480 File Name pw analysis 2.pws
29 Chalk Farm Road Permanent works	Engineer CO Date 17/10/2012

Structural design of wall

Wall section properties

Primary pile diameter	350 mm
Primary pile spacing	450 mm
Infill pile diameter	mm
Main rebar bar diameter	25 mm
Main rebar number of bars	6
Links/Helix bar diameter	10 mm
Links/Helix spacing/pitch	150 mm

Wall material properties

Concrete cube strength	35 N/mm2
Concrete cover	50 mm
Main rebar steel grade	500 N/mm2
Link rebar steel grade	500 N/mm2
Ultimate load factor	1.20

Wall structural design checks

Check description	Required or Limit	Provided or Actual	Units
Max. ultimate moment BS8110, Ultimate resistance	31	108	kNm
Maximum longitudinal steel BS8110, Max 6% by area	5772	2945	mm2
Minimum longitudinal steel BS8110, Min 0.4% by area	384	2945	mm2
Maximum ultimate shear BS8110 Ultimate resistance	44	174	kN
Minimum link diameter BS8110, 6mm or 0.25x bar dia	6	10	mm
Max. link spacing/pitch BS8110, 12x main bar dia or 0.75d	182	150	mm
Minimum shear link area BS8110, Clause 3.4.5	222	1047	mm2/m

CANNON PILING TEL No: 01245 401333 FAX No: 01245 40111	DESIGN CALCULATION SHEET	
	CONTRACT NO:	1480
	SITE ADDRESS:	29 Chalk Farm Road
TITLE / ELEMENT: CONTIG LOAD BEARING DESIGN		DATE: 17-Oct-12

CONTENTS:-

1. PURPOSE.
2. STRATA.
3. LOADS.
4. DESIGN PARAMETERS.
5. DESIGN.
6. SUMMARY.

APPENDIX A:- SITE INVESTIGATION / SOILS INFORMATION.
DRAWINGS

1. PURPOSE:-

Design piles to support R.C. slab as shown and specified on drawing: L1078 006 Rev0

2. STRATA:-

The Geological Survey for the area shows the site to be underlain by: London Clay

The Site Investigation supports this with the Borehole logs showing the site to be underlain by Stiff becoming Very Stiff with depth Silty Clay.

There is no risk of clay heave acting on these piles

Here the site is to be excavated in front of the piles to EGL - 4.0 M

So for load bearing calculations ignore 0 - 1.35 M

and take 50% of skin friction assuming group action 1.35 - 4.5 M

BOREHOLE LOGS SUMMARY:-

DEPTH	STRATA / COMMENTS	STRENGTH
0.0 - 1.35	IGNORE -	
1.35 -	London Clay	

TYPE OF PILE REQUIRED:- HOLLOW STEM CONCRETE INJECTED (CFA)

There are In Situ Hand Penetrometer test results for soil parameters and Laboratory Triaxial Tests and these have been plotted against depth - see appendix A.

By inspection then and taking a conservative view on the Cohesive strengths within the desiccated zone it is reasonable to adopt the following strength profile, with Clay Cohesions increasing with depth as follows:

for depths greater than 1.4 M Cu increasing at 7.2 KN/M² per m depth
in line with plot of Cohesions against depth from Site Investigation

STRENGTH PROFILE:-

DEPTH	COHESIVE STRENGTH C
0 - 1.35	IGNORE - EXCAVATED / MADE GROUND.
1.35 - 2.0	32.0 KN/M ²
2.0 - 3.0	39.2 KN/M ²
3.0 - 4.0	46.4 KN/M ²
4.0 - 5.0	53.7 KN/M ²
5.0 - 6.0	60.9 KN/M ²

increase with depth at 7.2 KN/M² per m depth

3. DESIGN PARAMETERS & DESIGN:-**FROM ATTACHED SHEETS (EMBEDDED PILED RETAINING WALL CALCS) CONTIG PILE DET/**

Pile Diameter: 350 mm @ 450 mm ccs
MIN Pile length: 8.5 M

FOR PILES ABOVE DREDGE LEVEL:

TAKE 50% OF AVAILABLE SKIN FRICTION OVER PILE SPACING = 450 mm

FOR PILES BELOW DREDGE LEVEL:**PILES ACTING ALONE:**

Cross Sectional Area CSA: 0.10 m²
Circumference CIRC: 1.10 m

PILES ACTING AS GROUP:

CSA GROUP = dia X spacing = 0.16 m²
CIRC GROUP = 2 X spacing = 0.90 m

REINFORCEMENT CAGE DETAILS:

MAIN BARS: 6 No T 25 8.5 M LONG
 SPIRAL T: 10 250 mm OD 150 mm pitch 56 TURNS
 WEIGHT: 224.1 kgs

4. LOADS:-

Working Loads taken from drawings as follows

LINE LOAD: 180 KN/M = 81 KN/PILE

PILE NO	LOAD KN		
	LINE	COL	TOTAL
1	180		81
2	180		81
3	180		81
4	180		81
5	180		81
6	180		81
7	180		81
8	180		81
9	180		81
10	180		81
11	180		81
12	180		81
13	180		81
14	180		81
15	180		81
16	180		81
17	180		81
18	180		81
19	180		81
20	180		81
21	180		81
22	180		81
23	180		81
24	180		81
25	180		81
26	180		81
27	180		81
28	180		81
29	180		81
30	180		81
31	180		81
32	180		81
33	180		81
34	180		81
35	180		81
36	180		81
37	180		81
38	180		81
39	180		81
40	180		81
41	180		81
42	180		81
43	180		81
44	180		81
45	180		81
46	180		81
47	180		81
48	180		81
49	180		81
50	180		81
51	180		81
52	180		81

PILE NO	LOAD KN		
	LINE	COL	TOTAL
63	180		81
64	180		81
65	180		81
66	180		81
67	180		81
68	180		81
69	180		81
70	180		81
71	180		81
72	180		81
73	180		81
74	180		81
75	180		81
76	180		81
77	180		81
78	180		81
79	180		81
80	180		81
81	180		81
82	180		81
83	180		81
84	180		81
85	180		81
86	180		81
87	180		81
88	180		81
89	180		81
90	180		81
91	180		81
92	180		81
93	180		81
94	180		81
95	180		81
96	180		81
97	180		81
98	180		81
99	180		81
100	180		81
101	180		81
102	180		81
103	180		81
104	180		81
105	180		81
106	180		81
107	180		81
108	180		81
109	180		81
110	180		81
111	180		81
112	180		81
113	180		81
114	180		81

53	180
54	180
55	180
56	180
57	180
58	180
59	180
60	180
61	180
62	180

81
81
81
81
81
81
81
81
81
81

115	180
116	180
117	180
118	180
119	180
120	180
121	180
122	180
123	180
124	180

81
81
81
81
81
81
81
81
81
81

TOTAL NOS PILES: 124

VERTICAL LOAD DESIGN:

PILE DIA: 350	CIRC 1.10	FOS WORKING LOAD 3.0
	CSA 0.10	FOS UPLIFT 1.5

FOS Working Loads: 3.0

FOS against Uplift Due to Heave: 1.5

Top of available Pile for vertical loads: EGL - 4500 mm

Maximum Pile Length Nominal: 26 M - (Pile Dia X slenderness ratio 75)

Pile Concrete Class C 35 Class DC- 2

Max allowable stress in pile concrete = $F_{cu}/4$ (at working load)

here MAX PILE SWL = 842 KN

IN COHESIVE SOILS:

Cohesive Strength C: As strength profile above

Ultimate End Bearing Capacity EBULT: $9 \times C \times A \times C$ KNUltimate Shaft Friction Capacity SFULT: $\alpha \times C \times CIRC$ KN/Mwhere α for London Clay = 0.50 & Max $\alpha C = 140 \text{ KN/M}^2$ (LDSA guidance note 1)or where αC for Boulder Clay = 72.0 KN/M² (see Tomlinson)

Depth of Desiccation Liable to Heave: N/A M BEGL

Uplift on Beams/Slab due to Heave: Zero

DEPTH	cohesion C KN/M ²	EBULT KN	αC KN/M ²	SFULT KN	CUM SFULT KN	ULT CAPACITY KN	SAFE CAPACITY KN	SWL acting as group KN
0.0 - 1.35	Ignore							
1.35 - 1.5	32		16	0.5	0.5			
1.5 - 2.0	32		16	1.8	2.3			
2.0 - 2.5	39		20	2.2	4.5			
2.5 - 3.0	39		20	2.2	6.8			
3.0 - 3.5	46		23	2.6	9.4			
3.5 - 4.0	46		23	2.6	12.0			
4.0 - 4.5	54		27	3.0	15.0			
4.5 - 5.0	54	46.5	27	14.8	29.7	76.2	25	33
5.0 - 5.5	61	52.7	30	16.7	46.5	99.2	33	41
5.5 - 6.0	61	52.7	30	16.7	63.2	115.9	39	46
6.0 - 6.5	68	59.0	34	18.7	81.9	140.9	47	55
6.5 - 7.0	68	59.0	34	18.7	100.7	159.6	53	60
7.0 - 7.5	75	65.2	38	20.7	121.4	186.6	62	69
7.5 - 8.0	75	65.2	38	20.7	142.1	207.3	69	74
8.0 - 8.5	83	71.5	41	22.7	164.8	236.2	79	84
8.5 - 9.0	83	71.5	41	22.7	187.4	258.9	86	90
9.0 - 9.5	90	77.7	45	24.7	212.1	289.8	97	100
9.5 - 10.0	90	77.7	45	24.7	236.8	314.5	105	107
10.0 - 10.5	97	84.0	48	26.7	263.5	347.4	116	118
10.5 - 11.0	97	84.0	48	26.7	290.1	374.1	125	125
11.0 - 11.5	104	90.2	52	28.6	318.8	409.0	136	136
11.5 - 12.0	104	90.2	52	28.6	347.4	437.6	146	144
12.0 - 12.5	111	96.5	56	30.6	378.0	474.5	158	156
12.5 - 13.0	111	96.5	56	30.6	408.7	505.1	168	164
13.0 - 13.5	119	102.7	59	32.6	441.3	544.0	181	176
13.5 - 14.0	119	102.7	59	32.6	473.9	576.6	192	185
14.0 - 14.5	126	109.0	63	34.6	508.5	617.5	206	198
14.5 - 15.0	126	109.0	63	34.6	543.1	652.1	217	208

FROM INSPECTION OF TABLE ABOVE REQUIRED PILE LENGTHS AS FOLLOWS:-

PILE DIA: 350

SAFE WORKING LOAD KN	PILE DEPTH BEGL M
up to 81	8.5 (MINIMUM)

CANNON PILING

TEL No: 01277 657360
FAX No: 01277 636044

DESIGN CALCULATION SHEET

CONTRACT NO: 1480
SITE ADDRESS: 29 Chalk Farm Road

TITLE / ELEMENT: CONTIG LOAD BEARING DESIGN

DATE: 17-Oct-12

6. SUMMARY:-**PILE TYPE:- HOLLOW STEM CONCRETE INJECTED (CFA)****PILE DIAMETER:- 350 mm @ 450 mm Max spacing****PILE DEPTHS BEGL:-**

PILE NO	LOAD KN	LENGTH M	DATE DRILLED	PILE NO	LOAD KN	LENGTH M	DATE DRILLED
1	81	8.5		63	81	8.5	
2	81	8.5		64	81	8.5	
3	81	8.5		65	81	8.5	
4	81	8.5		66	81	8.5	
5	81	8.5		67	81	8.5	
6	81	8.5		68	81	8.5	
7	81	8.5		69	81	8.5	
8	81	8.5		70	81	8.5	
9	81	8.5		71	81	8.5	
10	81	8.5		72	81	8.5	
11	81	8.5		73	81	8.5	
12	81	8.5		74	81	8.5	
13	81	8.5		75	81	8.5	
14	81	8.5		76	81	8.5	
15	81	8.5		77	81	8.5	
16	81	8.5		78	81	8.5	
17	81	8.5		79	81	8.5	
18	81	8.5		80	81	8.5	
19	81	8.5		81	81	8.5	
20	81	8.5		82	81	8.5	
21	81	8.5		83	81	8.5	
22	81	8.5		84	81	8.5	
23	81	8.5		85	81	8.5	
24	81	8.5		86	81	8.5	
25	81	8.5		87	81	8.5	
26	81	8.5		88	81	8.5	
27	81	8.5		89	81	8.5	
28	81	8.5		90	81	8.5	
29	81	8.5		91	81	8.5	
30	81	8.5		92	81	8.5	
31	81	8.5		93	81	8.5	
32	81	8.5		94	81	8.5	
33	81	8.5		95	81	8.5	
34	81	8.5		96	81	8.5	
35	81	8.5		97	81	8.5	
36	81	8.5		98	81	8.5	
37	81	8.5		99	81	8.5	
38	81	8.5		100	81	8.5	
39	81	8.5		101	81	8.5	
40	81	8.5		102	81	8.5	
41	81	8.5		103	81	8.5	
42	81	8.5		104	81	8.5	
43	81	8.5		105	81	8.5	
44	81	8.5		106	81	8.5	
45	81	8.5		107	81	8.5	
46	81	8.5		108	81	8.5	
47	81	8.5		109	81	8.5	
48	81	8.5		110	81	8.5	
49	81	8.5		111	81	8.5	

50	81	8.5		112	81	8.5	
51	81	8.5		113	81	8.5	
52	81	8.5		114	81	8.5	
53	81	8.5		115	81	8.5	
54	81	8.5		116	81	8.5	
55	81	8.5		117	81	8.5	
56	81	8.5		118	81	8.5	
57	81	8.5		119	81	8.5	
58	81	8.5		120	81	8.5	
59	81	8.5		121	81	8.5	
60	81	8.5		122	81	8.5	
61	81	8.5		123	81	8.5	
62	81	8.5		124	81	8.5	

TOTALS: NO: 124 LM:- 1054 AVERAGE L: 8.5

CONCRETE:- 101.4 m³ C 35 **CLASS DC- 2**

+ WASTAGE:- 30% = 131.8 m³

SLUMP:- 100MM (SELF COMPACTING)

REINFORCEMENT:- CAGE MADE UP ON SITE AS FOLLOWS:

MAIN BARS: 6 No T 25 8.5 M LONG

SPIRAL T: 10 250 mm OD 150 mm pitch 56 TURNS

WEIGHT: 224.1 kgs

MAIN REINFORCEMENT TO PROTRUDE MINIMUM 500 MM INTO SLAB/BEAM

APPENDIX A:

SITE INVESTIGATION REF:- Extracts from Arcadis 937100603_02, Sept 2011 & 937100710_03,
Feb 2012

CONSTRUCTION DRAWINGS REF:- Pringeur-James
DWG NO: L1078 006 Rev0

CANNON PILING

DESIGN CALCULATION SHEET

TEL No: 01245 401333

FAX No: 01245 401111

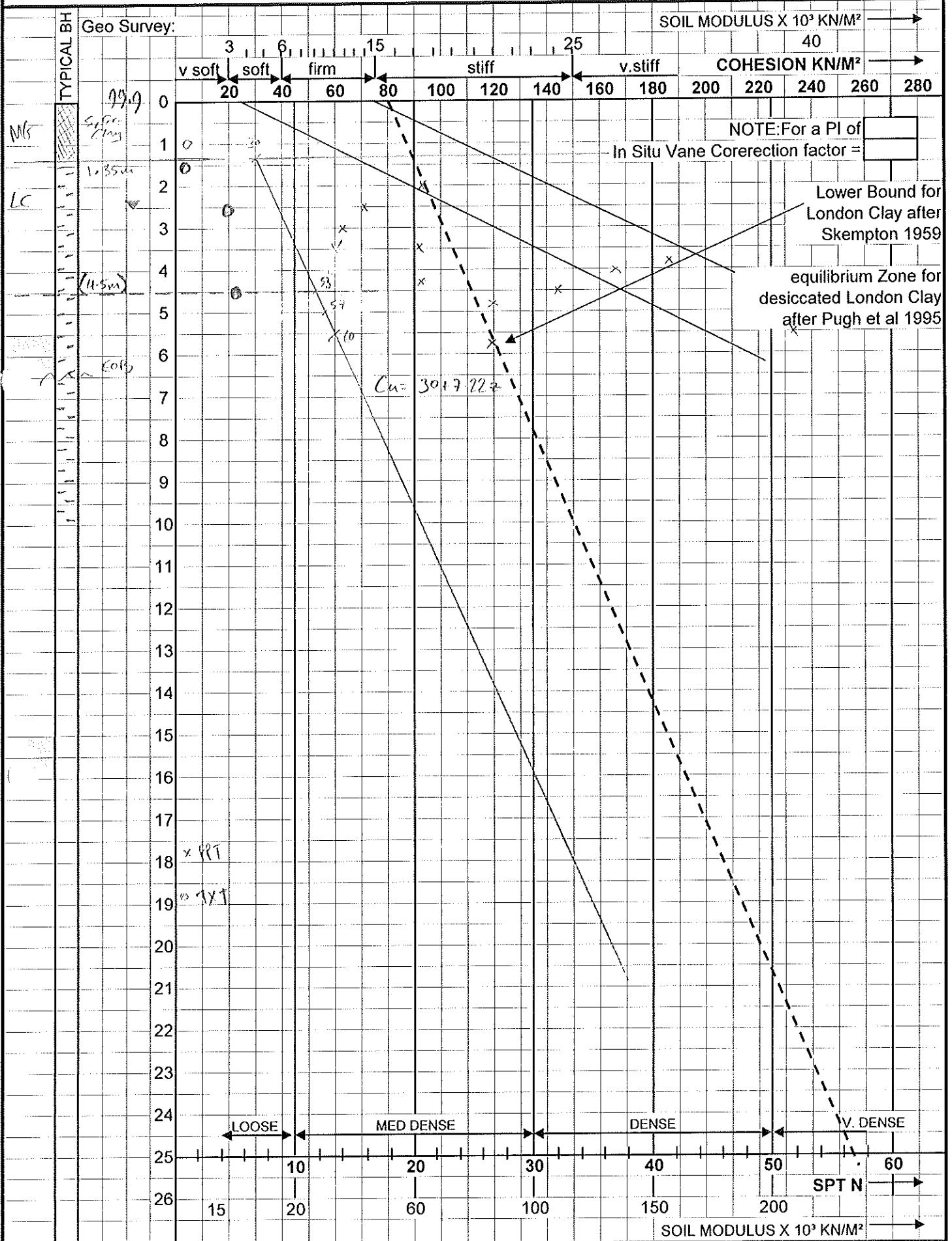
CONTRACT NO 9767

SHEET OF

SITE ADDRESS: 29 CHALK FARM ROAD

TITLE / ELEMENT: SITE INVESTIGATION SUMMARY

DATE: 4/10/12





NHBC REGISTERED HOUSE BUILDER

Tel: 01245 401333
Fax: 01245 401111
Email: sales@cannonpiling.com

VAT: 752 6361 29

Southend Road
Rettendon Common
Chelmsford,
Essex CM3 8DZ

Hallmark Estates Ltd.,
46, Great Marlborough Street,
London,
W1F 7JW

Date: 18-October-2012

Our Ref: 1480
Your Ref:

For the attention of: Simon Hikmet

Dear Sirs

**Re: 29 Chalk Farm Road, Camden.
CIS and Payment details**

For payments under this Contract we confirm the following:

Company registration Number: 3777195
Unique Tax Reference (UTR): 77146 12654

Accounts contact: Karen Bardwell
Email: karen@cannonpiling.com

For BACS Payments - Bank: National Westminster
Sort Code: 55-50-28
A/C No: 61059110

Yours Sincerely
for and on behalf of
Cannon Piling

C.J. Ford. BSc(Hons). CEng. MICE. MCIOB. MRICS.
Director

CANNON PILING - LIABILITY INSURANCE CERTIFICATE

SITE: 29 Chalk Farm Road, Camden.

REF: 1480

FARMER INSURANCE BROKERS

199-201 RUSH GREEN ROAD, ROMFORD, ESSEX RM7 0JR

OUR REF:

TELEPHONE:

YOUR REF:

CONFIRMATION OF INSURANCE

0844 257 1258

0844 257 1259

DATE:

Contractor:

Avoncross Ltd Trading As Cannon Piling

FACSIMILE:

0844 257 1256

Address:

Southend Road, Rettendon Common, Chelmsford,
CM3 8DZ

Business:

Building, Piling & Foundations Contractors

Situation:

Worldwide – Excluding North America

Period of Insurance:

1st February 2012 to 31st January 2013

Employers Liability

Limit of Indemnity:

£10,000,000 any one occurrence (limited to
£5,000,000 in respect of Offshore War & Terrorism)

Public Liability

Limit of Indemnity:

£5,000,000 Any One Occurrence/Unlimited during
the period of insurance

Products/Pollution

Liability

Limit of Indemnity:

£5,000,000 Any One Occurrence/and in the
Aggregate in the period of insurance

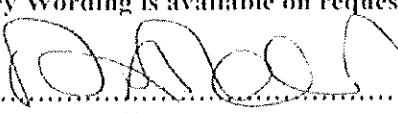
Insurer & Policy No:

QBE Insurance (Europe) Ltd – 11LFP02475

Special Conditions:

- Burning, Welding & Cutting Condition.
- Asbestos Exclusion.
- Forklift Truck/Far Boiler Conditions.
- Bona Fide Sub Contractors Condition.
- £2500 excess each & every loss increasing to
to £10,000 in respect of piling work.
- Excluding Professional Indemnity Risks.
- Depth Limit Amendment – Maximum of 26
metres.

Subject always to the Formal policy wording and the to the Policy, Cover,
Terms, Conditions, Exceptions, Exclusions and Endorsements therein. A copy of
the Policy Wording is available on request. Information correct at time of issue.

Signed..........Date 26th January 2012
Derek Farmer ACH

(Derek.farmer@farmergroup.co.uk)

Ref 30014

CANNON PILING - PI INSURANCE CERTIFICATE

SITE: 29 Chalk Farm Road, Camden.

REF: 1480

FARMER INSURANCE BROKERS

199-201 RUSH GREEN ROAD, ROMFORD, ESSEX RM7 0JR

OUR REF:

YOUR REF:

DATE:

TELEPHONE:

0844 257 1258

0844 257 1259

FACSIMILE:

0844 257 1256

PROFESSIONAL INDEMNITY COVER CONFIRMATION OF COVER

Policy No - PI10G511870

Name of Insured - Avoncross Limited t/as Cannon Piling

Address of Insured - Southend Road
Rettendon Common
Chelmsford
Essex
CM3 8DZ

Limit of Indemnity - £5,000,000
Any one claim and in total (including defence costs)

Period of Cover - 3rd July 2012 – 2nd July 2013 (both dates inclusive)

Insurers - HCC International Insurance Company Plc

Terms & Conditions - £10,000 excess applicable in respect of each and every claim,
inclusive of defence costs.
- Retroactive date – 3rd July 2004
- Geographical limits – Worldwide excluding USA/Canada
- Higher Limits Warranty
- Premium Payment Clause

Subject to the policy cover, terms, conditions, endorsements, exclusions and exceptions herein. A copy of the policy is available upon request. Information correct at time of issue only.

4th July 2012

(Ref: 3003/5)



NHBC REGISTERED HOUSE BUILDER

Tel: 01245 401333
Fax: 01245 401111
Email: sales@cannonpiling.com

VAT: 752 6361 29

Southend Road
Rettendon Common
Chelmsford,
Essex CM3 8DZ

SITE REF: 1480

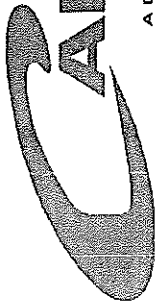
ADDRESS: 29 Chalk Farm Road, Camden.

METHOD STATEMENT

HOLLOW STEM CONCRETE INJECTED BORE PILES

ITEM

- 1 Read through PCM notes and brief operatives on specific hazards highlighted
- 2 When taking delivery of materials ensure loading and unloading MS/RA is adhered to.
- 3 Ensure that weekly plant inspections are kept up to date and report any defects to the office immediately.
- 4 Obtain overhead / underground service drawings and visually identify areas of potential services
- 5 Use a CAT scanner to identify any electrical, gas, water, cable television / telephone utility services etc. and hand dig to expose these.
- 6 Careful excavate by hand areas around suspected services.
- 7 ENSURE ALL SERVICES LOCATED ARE VISIBLY MARKED AND PROTECTED**
- 8 Set out pile position using 450mm long pin suitably tagged with pile number
- 9 Check fluid levels in power pack / rig, run up plant and check for leaks
- 10 Track rig to pile position
- 11 Set up rig over pile position ensuring mast vertical.
- 12 Commence drilling
- 13 Check pile depth and verticality using on board computer.
- 14 Examine arisings and check that they coincide with those soils anticipated, if not stop and contact the office immediately.
- 15 Continue this process until designed depth is reached
- 16 Remove spoil arisings from work area.
- 17 In conjunction with the static concrete pump, begin to inject concrete through augers whilst withdrawing, continue this until the augers have been completely withdrawn and the pile is concreted to the required formation level.
- 18 Install reinforcing cage to required cut of level, secure and install anti heave sleeve if required.
- 19 Ensure local authority has inspected piles, record this.



A Division of Avoncross Limited

Tel: 01245 401333 Fax: 01245 401 111



Southend Road
Rettendon
Common Essex
CM3 8DZ

METHOD STATEMENT / RISK ASSESSMENT

BORED HOLLOW STEM CONCRETE INJECTED PILES

Description: The construction of Bored Hollow Stem Concrete Injected Piles in a non restricted access situation, using a specialist hydraulically powered tracked rig in conjunction with a static concrete pump. This MS/RA to be read in conjunction with MS/RA for use of plant and deliveries.

SITE REF: 1480	ADDRESS: 29 Chalk Farm Road, Camden.	ISSUE NO: 1	DATE:
GENERAL: Ensure you have all your PPE, safety equipment and safety signs prior to starting.		SAFETY EQUIPMENT + PPE TO BE USED: Safety Helmet, Footwear, Goggles/Specs & Gloves Fluorescent Jacket / Hi-Vis & Ear Defenders Overalls Safety Harness First Aid Kit Rebar Protection Caps.	

Ensure that The Site has been set up by The Client / Main Contractor in accordance with the PCM/RA notes - especially piling mat / fencing / security / access and welfare. If it has not, do not start work and contact your Contracts Manager immediately.

Ensure that Safety Plan and all job start-up information is included with the start up pack. Take delivery of materials, plant etc. checking against those itemised in the start up sheet. Damaged / missing materials and plant must be logged on the delivery docket and the buying department informed. Always check plant is operational before the delivery driver leaves site.

L = Likelihood	Low - Unlikely to occur - 1	1
	Medium - Likely to occur - 2	2
	High - Very Likely to occur - 3	3
S = Severity	Slight Injury - Minor cuts and bruises - 1	1
	Serious Injury - Hospital treatment, more than 3 days off work, could result in long term ill health	2
	Major injury - over 24hrs in hospital, multiple serious injuries Fatality - 3	3
T = Total	2 Low - No further assessment required	
	3 Medium - Controls required, M/S may be considered part of the risk Assessment	
	4 High - Additional controls required - Task specific M/S should be produced	
	5 Exceptionally High - Additional controls, task specific M/S and specific task briefing required	

JOB SPECIFIC:

Upon arrival ensure that all welfare provisions are in place, all security fencing and signage are erected, any obvious hazards have been highlighted in the PCM notes and the project is ready.
Read through PCM notes and brief operatives on specific hazards highlighted
When taking delivery of materials ensure loading and unloading MS/RA is adhered to.
Ensure that weekly plant inspections are kept up to date and report any defects to the office immediately.

SITE REF:	1480	ADDRESS: 29 Chalk Farm Road, Camden.	ISSUE NO:	1	DATE:
ITEM / EVENT / METHOD	RISK / CONSEQUENCE	Initial RISK L S T	PRECAUTIONS / EQUIPMENT	Residual RISK L S T	RESPONSIBILITY
Obtain overhead / underground service drawings and visually identify areas of potential services					
Use a CAT scanner to identify any electrical, gas, water, cable television / telephone utility services etc. and hand dig to expose these.	Risk of electric shock, burning injury, fire, explosion, flooding, gas inhalation and fatality.	2 3 6	Ensure the operator of the CAT scanner is competent and trained. Ensure suitable fire extinguisher available on project.	1 2 2	Main Contractor
Careful excavate by hand areas around suspected services.	Risk of electric shock, burning injury, fire, explosion, flooding, gas inhalation and fatality.	2 3 6	Take care in the 1st 500mm of excavation, never use pick axe or other sharp implements.	1 3 3	Main Contractor
ENSURE ALL SERVICES LOCATED ARE VISIBLY MARKED AND PROTECTED					
Mark out and begin to break out concrete at pile positions if applicable.	Vibration white finger	1 2 2	Ensure HAV assessment completed and adhere to trigger times.	1 2 2	Main Contractor Keyman
	Injury to eyes, hearing	2 2 4	Wear ear defenders and goggles at all times	1 1 2	Main Contractor Keyman
Set out pile position using 450mm long pin suitably tagged with pile number	Injury caused by tripping over or falling on to pin	2 2 4	Ensure pin is clearly marked and a protective cap is placed on top.	1 2 3	Main Contractor Keyman
Check fluid levels in power pack / rig, run up plant and check for leaks	Damage to hearing	2 2 4	Ensure suitable hearing protection is worn	1 1 2	All operatives Keyman
	Inhalation of fumes	2 3 6	Ensure area is properly ventilated and respiratory protection is worn	2 2 4	Keyman
	Environmental damage due to leaks	2 2 4	Ensure spill kit is readily available to contain leaks	2 1 2	All operatives Keyman
	Dermatitis etc	2 2 4	Ensure COSHH assessment is in place and guidance followed.	1 2 2	Keyman
Track rig to pile position	Overturning of rig	2 3 6	Only track over level ground with mast raked back, ensure working platform certificate is completed if required	1 3 3	All operatives Keyman
	Crushing of personnel / damage to property	2 3 6	No plant movements to take place without banksmen	1 3 3	Main Contractor Keyman
Set up rig over pile position ensuring mast vertical.					All operatives Keyman

SITE REF: 1480		ADDRESS: 29 Chalk Farm Road, Camden.			ISSUE NO: 1			DATE:								
ITEM / EVENT / METHOD		RISK / CONSEQUENCE		Initial RISK L S T			PRECAUTIONS / EQUIPMENT		Residual RISK L S T			RESPONSIBILITY				
Commence drilling		Entanglement in augers or rotating machinery	2	3	6	Ensure all guards are in place and all personnel are visible to operator. Ensure augers are stopped prior to approaching							1	2	2	Main Contractor Keyman All operatives
		Cuts and bruising	2	1	2	Ensure gloves are worn							1	2	2	Keyman All operatives
		Injury caused by manual handling augers etc	2	2	4	Ensure manual handling assessment carried out prior to lift and follow controls							1	2	2	Main Contractor Keyman All operatives
Finding human / animal bones		Wells disease, Anthrax, tetanus	1	3	3	Ensure good hygiene standards are maintained and any wounds are adequately dressed.							1	2	2	Main Contractor Keyman All operatives
Examine arisings and check that they coincide with those soils anticipated, if not stop and contact the office immediately.																
Continue this process until designed depth is reached																
Remove spoil arisings from work area.		Slips trips and falls due to proximity of spoil heap to work area.	2	2	4	Ensure arising periodically moved to stockpile / skip and all areas kept clean and tidy.							1	2	2	Main Contractor Keyman All operatives

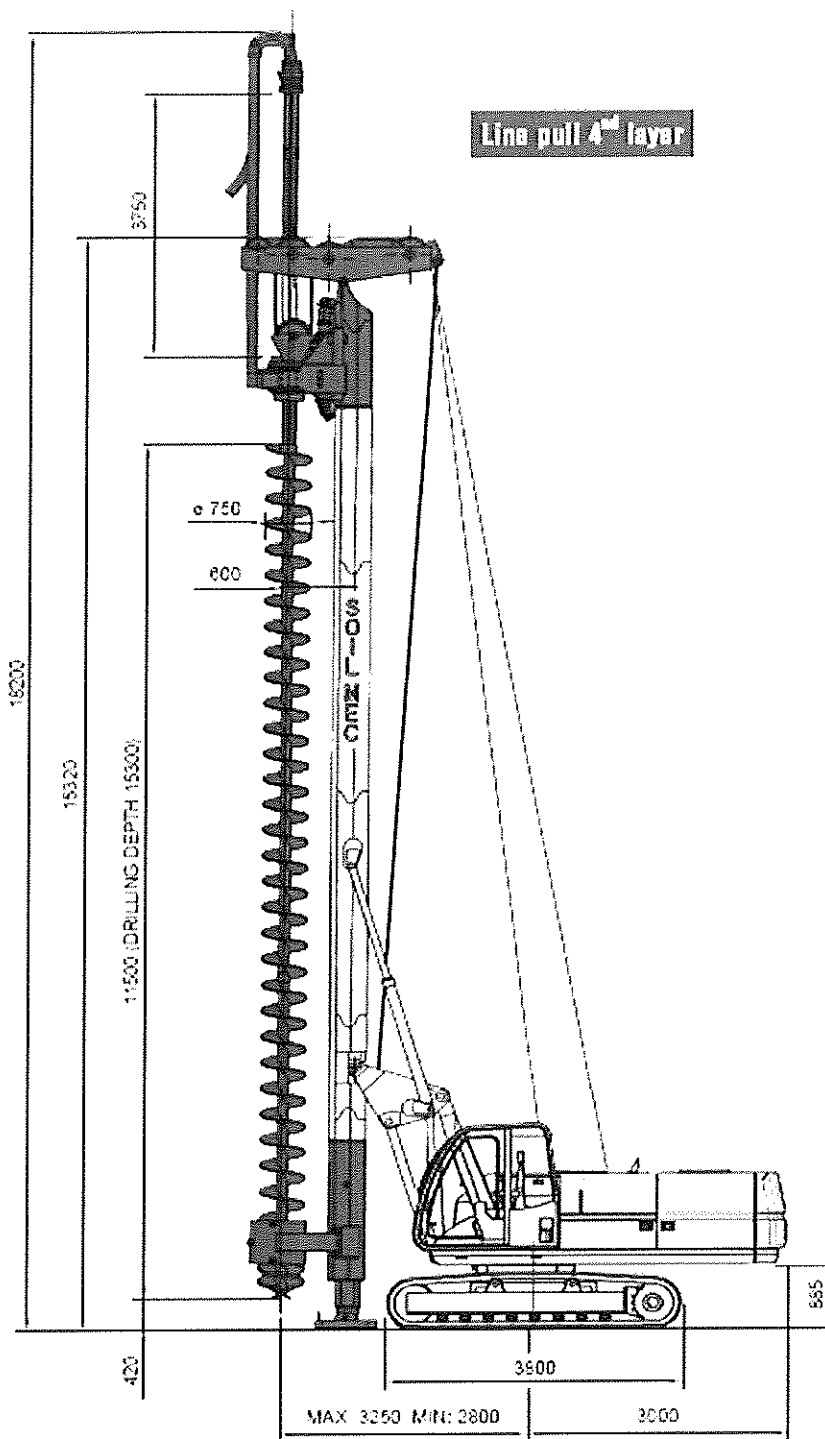
SITE REF: 1480		ADDRESS: 29 Chalk Farm Road, Camden.		ISSUE NO: 1		DATE:					
ITEM / EVENT / METHOD		RISK / CONSEQUENCE		Initial RISK L S T		PRECAUTIONS / EQUIPMENT		Residual RISK L S T		RESPONSIBILITY	
In conjunction with the static concrete pump, begin to inject concrete through augers whilst withdrawing, continue this until the augers have been completely withdrawn and the pile is concreted to the required formation level.		Manual handling injury whilst moving augers.		2	2	4	Ensure manual handling assessment in place and all controls followed, 2 man lift required.	1	2	2	Main Contractor Keyman All operatives
		Concrete burns					Ensure gloves, goggles and full length overalls worn, check COSHH assessment and follow controls.	1	2	2	Main Contractor Keyman All operatives
		Injury caused by slips trips and falls.		2	2	4	Ensure that all spoil and excess materials are cleared regularly and work area remains clear at all times.	1	2	2	Keyman All Operatives
		Injury caused by failure of concrete hoses under pressure.		2	2	4	Ensure all hoses are in good condition prior to use and all joints close correctly.	1	2	2	Main Contractor Keyman All operatives
Install reinforcing cage to required cut of level, secure and install anti heave sleeve if required.		Cuts / abrasions whilst handling augers etc		2	1	2	Wear gloves	1	2	2	Main Contractor Keyman
		Injury caused by manual handling.		2	2	4	Ensure manual handling assessment carried out prior to lift and follow controls	1	2	2	Keyman All operatives
		Cuts and abrasions due to sharp steel		2	2	4	Wear gloves and ensure all exposed areas are covered	1	2	2	Keyman All operatives
		Injury caused by falling onto cages.		2	2	4	Ensure protective "mushrooms" placed on all bars.	2	1	2	Keyman All operatives
Ensure Local Authority has inspected pile, Record this inspection.										Keyman	
Continue to keep site clean throughout the course of the works.										Main Contractor Keyman	

CANNON PILING - RIG DETAILS SOILMEC R208

SITE: 29 Chalk Farm Road, Camden.

REF:

1480



MAST HEIGHT M: 15.1
MAST + KELLY BAR HEIGHT M: 18.1

SHIPPING WEIGHT T: 26.0
SHIPPING LENGTH M: 13.5
SHIPPING HEIGHT M: 3.4
WIDTH OVER TRACKS MAX M: 3.4
WIDTH OVER TRACKS MIN M: 2.5
LENGTH OF TRACKS M: 3.8
TRACK PAD WIDTH mm: 600

MAX AUGER DIA mm: 750
MIN AUGER DIA mm: 250
MAX DRILL DEPTH M: 17.5

TORQUE KNM: 82
PULL OUT FORCE KN: 280
AUX WINCH CAPACITY KN: 40

NOISE LEVEL RIG dB: 80.0

