RetainingWall Solutions

Site location and general description

The project is to install a king post retaining wall to act as temporary support for the construction of a dwelling.

The king posts can be either bored out and concreted in or driven.

The piles are to be installed at the existing ground level, then the reduced dig will be be done in sections to allow the king post panels to be installed in an underpinning type sequence.

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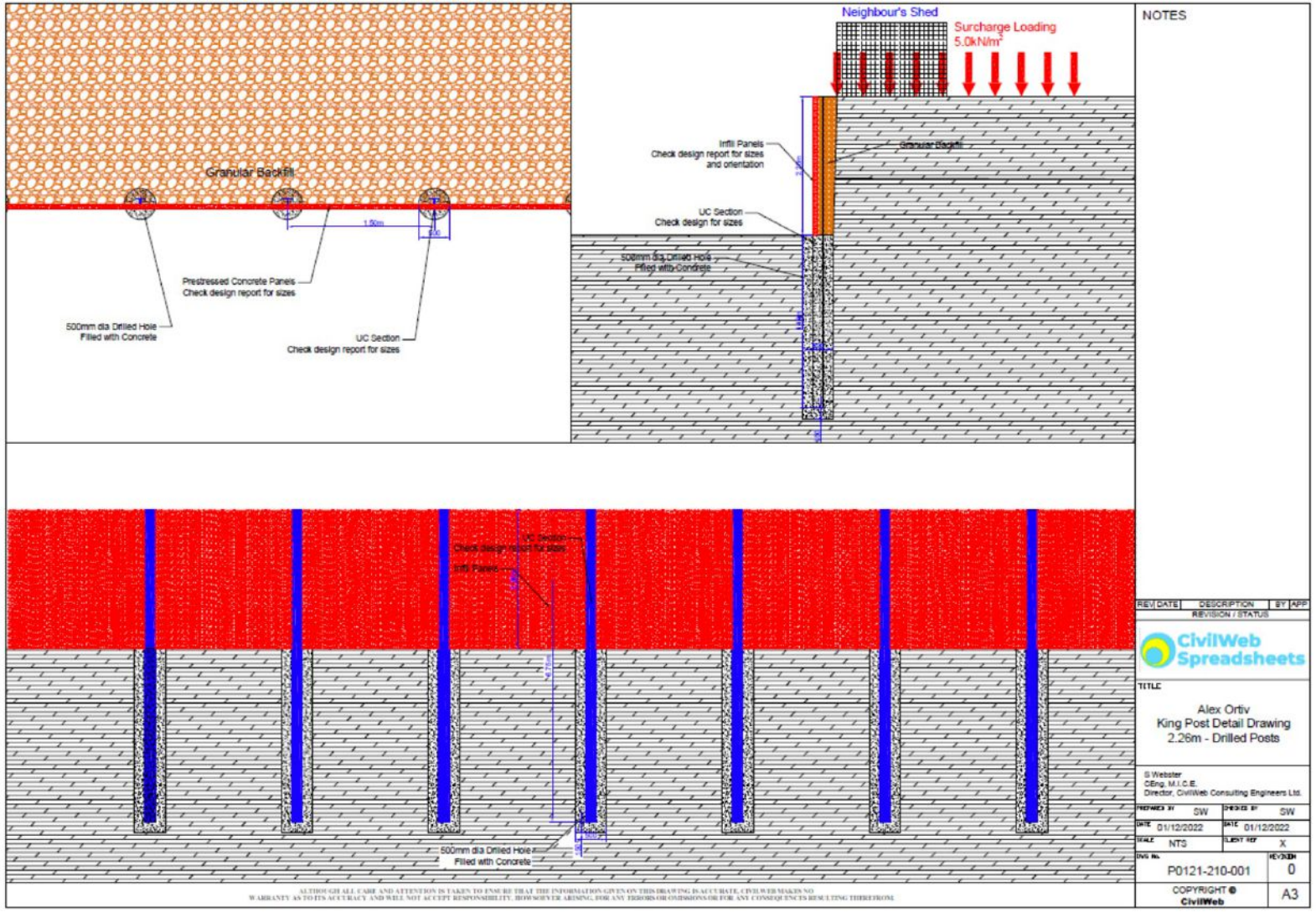
Post hole option



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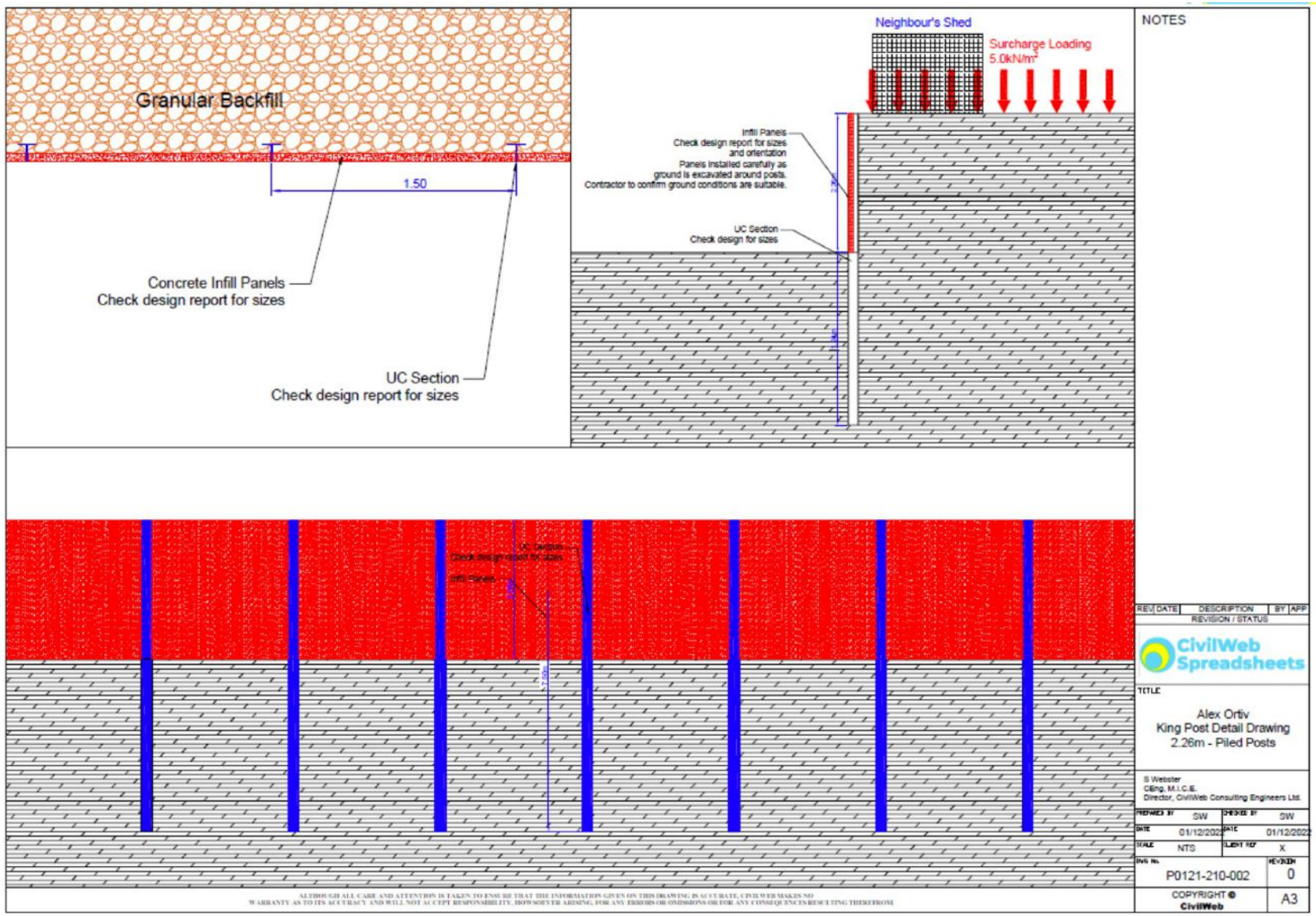
Post driven option



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Post information

King Post Retaining Wall Design – Embedment Depth

The design of the retaining wall was completed using GEO5 Sheeting Check software from Fine Software. All calculations are completed in accordance with BS EN 1997, BS EN 1993 and other relevant UK and European standards.

The results of this analysis are presented in the table below;

Retained Height (m)	Required Embedment Depth (m)	Required Steel Section	Spacing (m)	Lagging Max Moment (kNm per m)
up to 2.26m (Drilled Posts)	4.49	UC 152x152x23 S275	1.50	4.32
up to 2.26m (Piled Posts)	5.24	UC 152x152x37 S275	1.50	4.32

20 number piles 2.6m above ground embedment either 4.49 for a bored option or 5.24 for a driven option. Pile centers 1.5m

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Location of king post wall in orange

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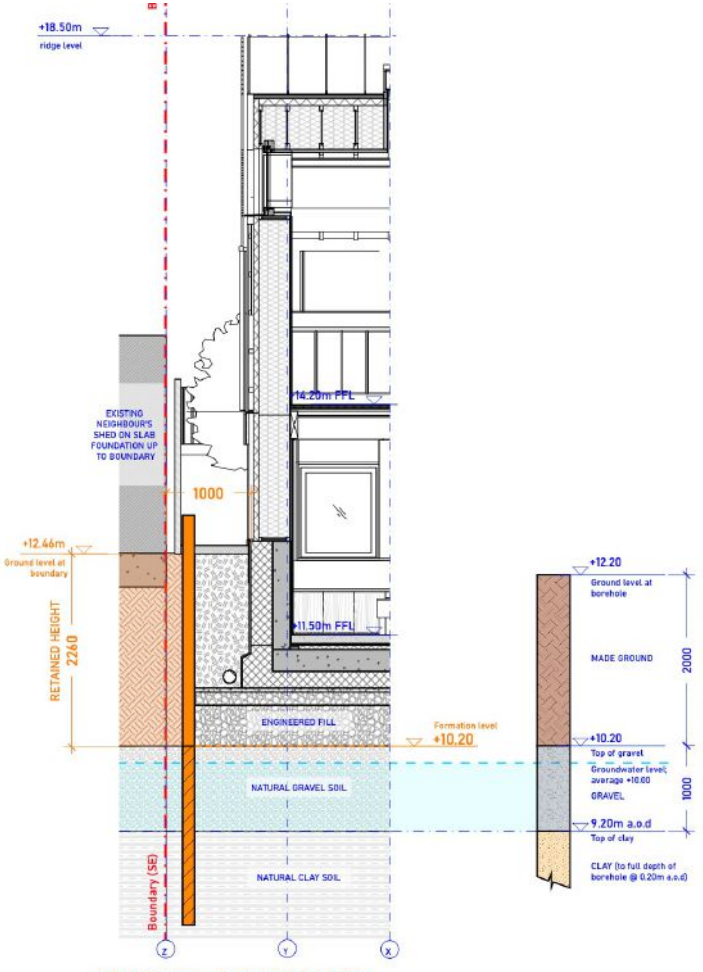
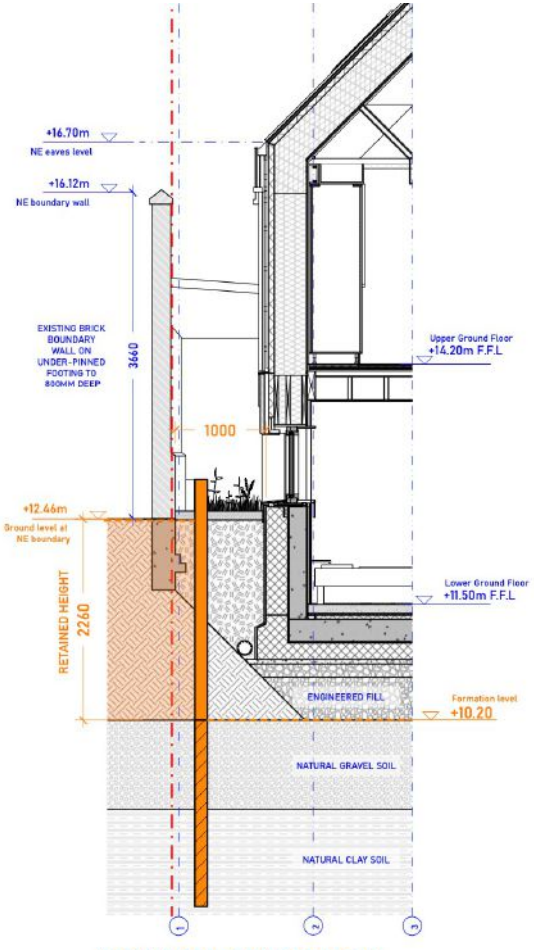
Section through construction

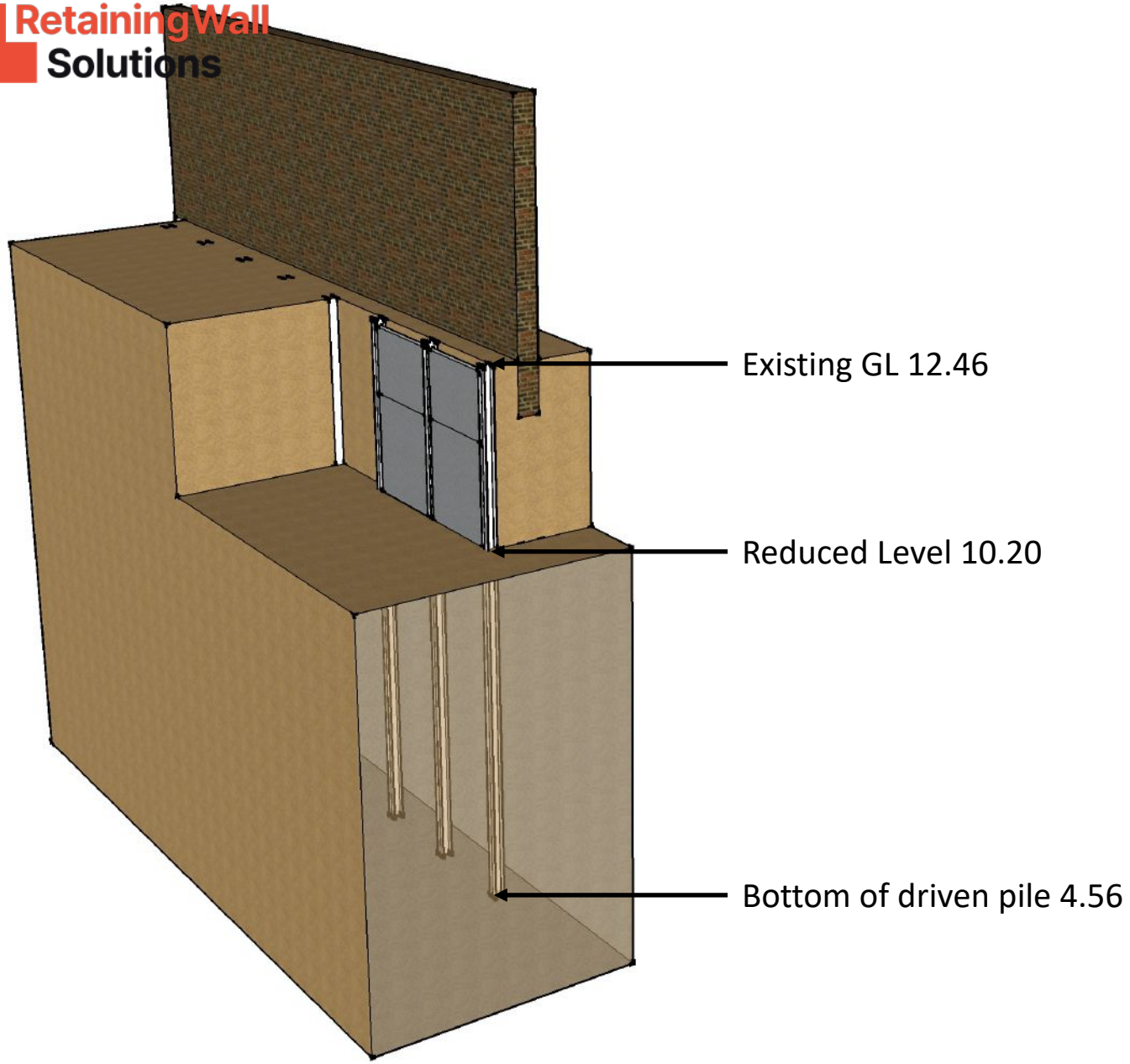


SECTION SL1 - RETAINED PART A
Length - 8.0m
Retained height - 2.26m
Exposed face of retaining structure to be max. 1.0m from site boundary.



SECTION ST7 - RETAINED PART B
Length - 17.5m
Retained height - 2.26m
Exposed face of retaining structure to be max. 1.0m from site boundary.

Sequence of work



Sequence

1) Drive piles from existing ground level to driven depth
2) Excavate in sections fitting panels as the work progresses
3) Fill behind panels as work progresses

The excavation works will be carried out by others.

GEA
Geotechnical & Environmental Associates

Project				BOREHOLE No
Farmer Road, Leyton London E10 5EQ				BH1
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J20065	11-05-20 11-05-20		E 537,724.0 N 187,337.0	
Client	Engineer		Sheet	
Alex Otiv	Engenuiti		1 of 2	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.40	D1					(2.00)	MADE GROUND (Loose black sand with red and yellow bricks and pebbles)	
1.20	B2	1,2/3,3,4,4 N60 = 18						
1.75	D3					2.00		
2.00	B4	3,8/11,13,14,18 N60 = 71				(1.00)	Dense sandy GRAVEL	
2.75	U5					3.00		
3.00	B6	1,1/2,2,2,2 N60 = 10				(0.50)	Firm yellow brown silty CLAY.	
3.75	U7					3.50		
4.00	D8	2,2/3,3,4,4 N60 = 18					Firm blue and grey slightly fissured silty sandy CLAY.	
4.75	D9							
5.00	U10	15 blows						
6.00	D11							
6.50	D12	2,3/3,4,4,5 N60 = 20				(6.50)		
7.50	D13							
8.00	U14	20 blows						
9.00	D15							
9.50	D16	3,3/4,5,5,7 N60 = 27				10.00		

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Services inspection pit excavated to 1.20 m for 30 minutes.
Borehole completed at 12.00 m.
Groundwater encountered at 10.00 m as slow seepage. No rise was recorded.

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable Percussion rig	Logged By Preliminary

Report ID: CABLE PERCUSSION || Project: J20065 - FARMER ROAD.GPJ || Library: GEA LIBRARY.GLB || Date: 18 May 2020

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Project				BOREHOLE No
Farmer Road, Leyton London E10 5EQ				BH1
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J20065	11-05-20 11-05-20		E 537,724.0 N 187,337.0	
Client	Engineer		Sheet	
Alex Otiv	Engenuiti		2 of 2	

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
10.50	D17					(2.00)	Firm blue and grey fissured sandy CLAY.	
11.55	U18	25 blows				12.00		

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Services inspection pit excavated to 1.20 m for 30 minutes.
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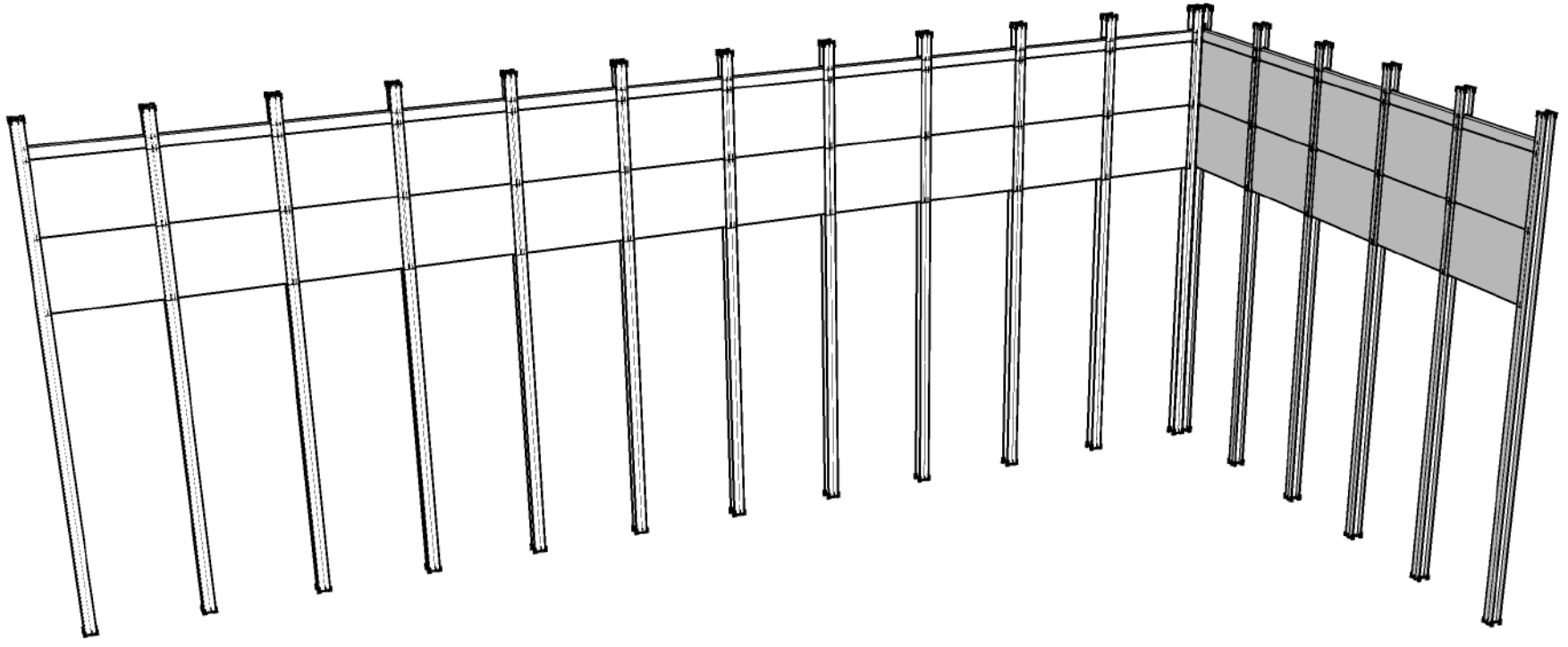
King Post Details



Levels

Top of post 12.70
Ground lev 12.46
Formation Lev 10.2
Bottom post 5.70

Posts

18 number posts 152 x 152 x 23kg x 7000mm
Embedment length 4.5m
Effective retaining height 2.26m
Steel above ground for installation 0.24m
Post c/c 1550mm

Panels

32 number panels 80mm wide x 1000mm high x 1500mm long
16 number lintels 100mm wide x 150mm high x 1500mm long

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Budget

Item	Quantity	Unit	Rate	Total	Options
King Post Installation					
Piling	1	Item			
Piling fabrications	18	Number			
Steel posts primed	18	Number			
Concrete panels	32	Number			
Concrete lintels	16	Number			
Concrete to piles	12	m3			
Main Contractor					
Overheads 10%					
Profit 5%					
Contingency	1	Item			

Notes

Site to be cleared for piling contractor.

Piling contractor has not been to site. Piling contractor needs to meet the main contractor and may need to adjust price for any site constraints.

When casting concrete below the ground level to the formation level a cardboard sleeve is to be installed to stop soil entering the post hole.

A fabricated ring is to be slid down the pile and down the post hole to centre the pile for plumbing and alinement. (Piling contractor has the detail.

The pile may need some fabrication work to allow a shackle to fitted to the top of the pile for lifting and to ensure gravity to plumb the post to make installation simple