

APPENDIX E

CGL Interpretative Letter Report

22 June 2022

Aldo d'Aponte
62 St. Martin's Lane
London
WC2N 4JS

4 Godalming Business Centre
Woolsack Way, Godalming
Surrey, GU7 1XW
Telephone: 01483 310600
cgl@cgl-uk.com
www.cgl-uk.com

Our ref: CG28408B

Please reply to: Anna Prescott

Dear Aldo

Barrie House, 29 St Edmunds Terrace, London

The following letter report reviews the historical ground investigation undertaken at Barrie House by Soil Consultants in 2012¹ alongside the supplementary ground investigation completed by CGL in 2022², providing updated recommendations where applicable. This letter report presents the following:

- A review of the anticipated ground conditions based on published and unpublished sources;
- An interpretation of the ground conditions encountered on site;
- Permeability calculations following the completion of rising head tests;
- A review of the ground gas risk; and
- Basement foundation recommendations following a review of the hydrological conditions.

Site Context

The site, Barrie House, is located at 29 St Edmund's Terrace, London, NW8 7QH. The site is located within the London Borough of Camden. The approximate National Grid Reference for the site is 527495E, 183575N. A site location plan is included as Figure 1.

The site is bound to the south by St Edmund's Terrace and to the west by Broxwood Way. Two rows of terraced houses & apartment blocks are present to the north of the site, referred to as Nos. 32 to 72 Kingsland and Nos. 1 to 16 Kingsland. To the east of the site, buildings named Regent Heights and Nos. 30 to 36 St Edmund's Terrace are positioned. Adjacent to the north-east of the site lies Barrow Hill water treatment plant.

The site comprises a roughly square plot approximately 0.18 hectares in area and is currently occupied by Barrie House, an eight-storey detached residential block, understood to have been constructed in the 1950's. The existing structure is located approximately central within the site and includes a basement beneath the centre of the building.

The proposed development is understood to comprise excavation of a single storey basement under the entire footprint of the existing building and an increase in the number of storeys of the existing building on site.

¹ Soil Consultants. (November 2012). *Ground Investigation Report. Barrie House, 29 St Edmund's Terrace, London NW8 7QH.* 9241/OT/JRCB.

² CGL. (June 2022). *Factual Report. Barrie House, 29 St Edmunds Terrace, London.* CG/28408B.



DIRECTORS

Dan Matthews BEng CSci CEnv MIEngSc MCMI
Richard Pennock MSc BEng ACSM CEng CMgr AMICE MIMMM MCMI FGS
Mark Creighton CEng FICE

Card Geotechnics Limited
Registered in England and Wales No. 2993862
Registered Office at
4 Godalming Business Centre, Woolsack Way
Godalming, Surrey, GU7 1XW

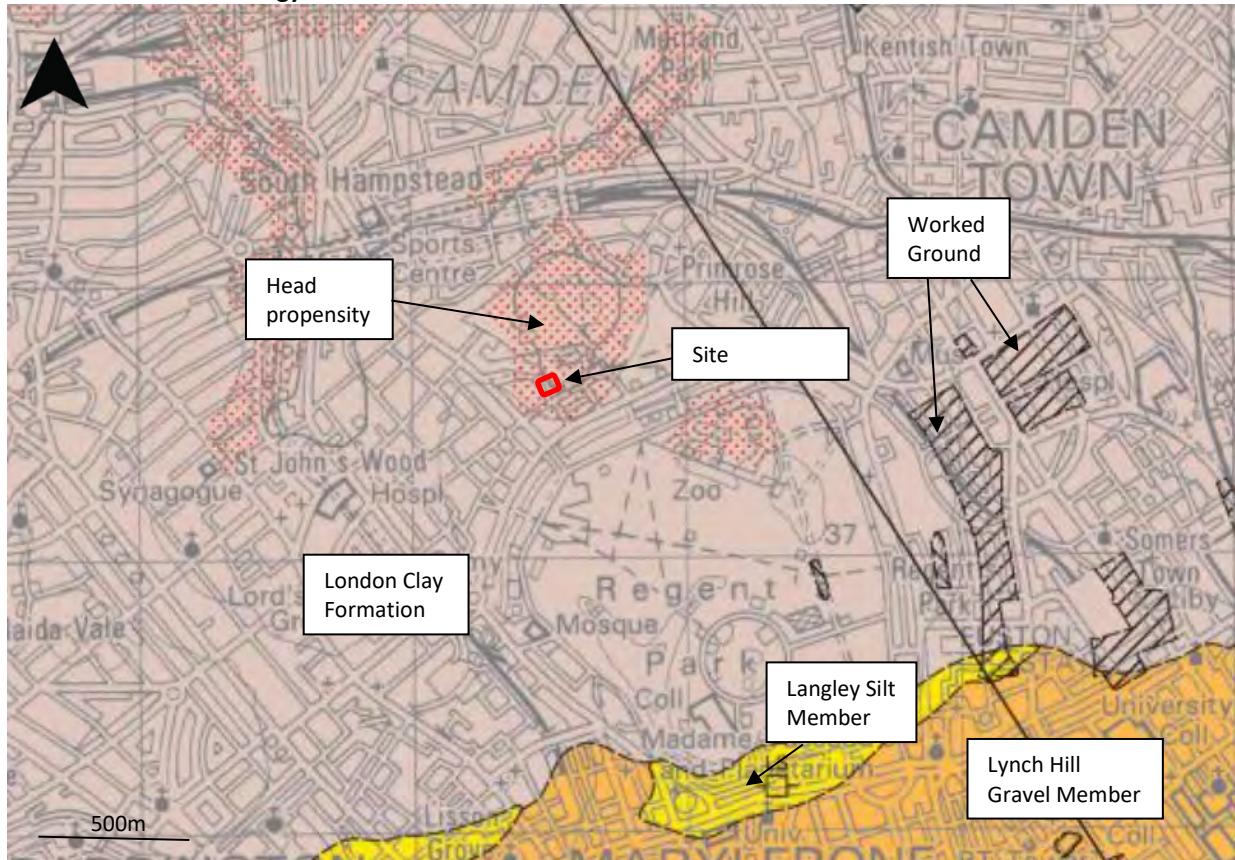
Anticipated Ground Conditions

The published geology of the site is illustrated in Plate 1, below. With reference to the British Geological Survey (BGS) mapping³, the site is anticipated to be underlain by solid geology of the London Clay Formation, typically comprising firm to stiff blueish grey or greyish brown silty clay. This is anticipated to be some 50m thick on site.

No superficial deposits are mapped on site, however, as illustrated in Plate 1, below, the site lies within an area for 'Head propensity' indicating Quaternary Head deposits are likely to be present based on digital slope analysis.

Superficial deposits comprising the Langley Silt Member and Lynch Hill Gravel Member are recorded some 1.5km south of the site. The Langley Silt Member typically comprises yellowish brown silts and clays, and the Lynch Hill Gravel Member usually consists of sands and gravels, locally with lenses of silt, clay or peat. Worked Ground is recorded approximately 1.2km east of the site.

Plate 1. Published Geology.



³ British Geological Survey (BGS). *Geology of Britain Viewer*. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>. [Accessed March 2022].

Previous investigation (2012)

In September 2012, Soil Consultants¹ undertook a ground investigation on site comprising one cable percussive borehole to 7.5mbgl, three windowless sample boreholes to a maximum depth of 5mbgl, and three foundation inspection trial pits. The windowless sample and cable percussive borehole records and subsequent monitoring data are summarised in Table 1, below.

Table 1. Summary of Soil Consultants 2012 Ground Investigation.

Reference	Base of Borehole (mbgl)	Depth to Top of Stratum (mbgl)		Groundwater Level (mbgl)	
		Made Ground / Topsoil	London Clay Formation	Strike During Drilling	Water Level During Monitoring
BH1	7.5	0.00 [46.00]	0.50 [45.50]	Not observed	Not installed
WS1	5.0	0.00 [45.60]	1.75 [43.85]	1.40	0.95
WS2	5.0	0.00 [44.60]	2.10 [42.50]	Not observed	3.5m
WS3	5.0	0.00 [45.30]	1.62 [43.68]	Not observed	Not installed

Some 0.5m to 2.0m of Made Ground or Topsoil was encountered on site, overlying London Clay Formation. The location of these exploratory holes are illustrated on Figure 2.

Within the London Clay Formation, a total of three SPT 'N' values were recorded between 6 and 16. Assuming an SPT hammer energy ratio of 60 and an f_1 value of 4.5, these correspond to undrained shear strengths of between 27kPa and 72kPa. One undrained triaxial test was undertaken on the clay from 1.1mbgl, recording an undrained shear strength of 51kPa. A total of 43 Hand Shear Vane (HSV) tests were undertaken within the London Clay, recording undrained shear strengths of between 47kPa and 120kPa. These correspond to relative consistencies of 'soft' to 'stiff'⁴.

CGL 2022 Investigation

An intrusive ground investigation was carried out at the site by CGL on 5th May 2022² and comprised the excavation of four windowless sample boreholes (WS201 to WS204) to a maximum depth of 6.0mbgl, with the installation of ground gas and groundwater monitoring standpipes. The location of the exploratory holes are illustrated in Figure 2.

The ground conditions encountered during the intrusive investigation generally agreed with the published geology, typically comprising Made Ground overlying Weathered London Clay Formation. A propensity for Head was anticipated based on BGS mapping, and deposits considered consistent with Head were identified in WS204. The ground conditions are summarised in Table 2, below.

⁴ British Standards Institution. (2020). *Code of practice for site investigations*. BS 5930:2015 +A1:2020.

Table 2. Summary of CGL 2022 Ground Conditions.

Stratum	Top of Stratum (mbgl) [Level (mOD)]	Thickness (m)
Brown, occasionally mottled yellow, occasionally red or light brown mottled black, silty gravelly sand, sandy cobbles, sandy cobbly gravel, or gravelly clay. Sand is fine to medium. Gravel is angular to subrounded fine to coarse of flint, concrete, bound surfacing and brick. Cobbles are angular to subangular of broken brick, concrete, bound surfacing and mortar. Occasional to frequent rootlets noted. Variable hardstanding encountered – 50mm thick paving blocks and 100mm concrete layer encountered in WS201; bound surfacing and reinforced concrete to 0.25mbgl encountered in WS203; and bound surfacing to 0.18mbgl encountered in WS204. Turf was encountered at ground level in WS202.	0.00 [46.42 to 46.12]	0.25 to 1.60
[MADE GROUND] Soft light brown slightly sandy cobbly CLAY. Cobbles are angular to subrounded, <150mm diameter, of flint. Sand is fine to medium. Occasional <5mm lignite inclusions.	0.45 [45.52]	0.45
[HEAD] <i>Only encountered in WS204</i> Soft to firm, becoming firm to stiff with depth, light brown, occasionally mottled yellow, red brown or grey, often sandy CLAY. Sand is fine to coarse. Clay is extremely closely fissured, becoming closely fissured with depth. Occasional inclusions of yellow or orange sand <40mm diameter and 1-10mm thick sand lenses noted throughout. Occasional to frequent, typically <2mm diameter, selenite crystals noted throughout. Occasional <5mm diameter lignite inclusions, relict rootlets and bioturbation noted in WS204.	0.25 to 1.6 [45.87 to 43.76]	>5.75 (base not proven)
[WEATHERED LONDON CLAY FORMATION]		

Plots of SPT 'N₆₀' values versus level and undrained shear strength (C_u) vs level are included as Figure 3 and Figure 4, respectively. Further details of the ground conditions are provided below.

Made Ground

Made Ground was encountered in all window sampler borehole locations to a maximum depth of 1.60mbgl. The stratum was highly variable, typically comprising hardstanding over a silty gravelly sand. The gravel was typically of flint, concrete, brick and bound surfacing. Rootlets were occasionally recorded.

In WS201, 50mm thick paving blocks were encountered at ground level, with an additional 100mm thick concrete layer at 0.2mbgl, and sandy cobbles encountered between 1.3mbgl and 1.6mbgl. No hardstanding was encountered in WS202, where turf was noted at ground level and a soft light brown mottled black gravelly clay was encountered between 0.6mbgl and 1.4mbgl. In WS203, 50mm of bound surfacing was noted overlying reinforced concrete to 0.25mbgl; and in WS204, 180mm of b was encountered from ground level overlying a brown sandy cobbly gravel.

One SPT 'N' value was recorded within this stratum at 8, within the cohesive deposits in WS202. Based on an energy ratio of 65%, this corresponds to an SPT 'N₆₀' value of 9, correlating to an undrained shear strength (C_u) value of 40.5kPa (where f₁ = 4.5)⁵ or a relative consistency of 'firm'⁴.

⁵ Stroud, M. A. (1975). The standard penetration test in insensitive clays and soft rocks, *Proceedings of the European Symposium on Penetration Tests*, 2, 367-375.

Head

Head was only encountered in window sampler borehole WS204 between 0.45mbgl and 0.9mbgl. The stratum comprised soft light brown slightly sandy cobbly clay. The cobbles were of flint and occasional lignite inclusions were noted.

Weathered London Clay Formation

Weathered London Clay Formation were encountered in all exploratory hole locations, proven to a maximum depth of 6mbgl. The stratum typically comprised soft to firm, becoming firm to stiff with depth, light brown, occasionally mottled yellow, red brown or grey, often sandy clay. The clay was typically extremely closely fissured, becoming very closely and closely fissured with depth. Yellow and orange sand inclusions up to 40mm diameter were frequently noted, alongside sand partings up to 10mm diameter. Selenite crystals, typically up to 2mm diameter, were frequently recorded.

Ten SPT 'N' values were recorded within this stratum between 8 and 18. Based on an energy ratio of 65%, these correspond to SPT 'N₆₀' values of between 9 and 20, correlating to undrained shear strength (C_u) of between 36kPa and 90kPa (where $f_1 = 4.5$)⁵ and a relative consistency of 'soft' to 'stiff'⁴.

A total of 14 Hand Shear Vane (HSV) tests were undertaken within this stratum, recording values of undrained shear strength (C_u) of between 41kPa and 103kPa. These correspond to relative consistencies of 'firm' to 'stiff'.

Ground Model Summary

The ground model encountered on site comprised Made Ground containing variable hard standing surfaces overlying Weathered London Clay Formation. The Made Ground was noted to be thicker in the west of the site (1.6m and 1.4m in WS201 and WS202, respectively), becoming thinner in the east (0.25m and 0.45m in WS203 and WS204, respectively). This is consistent with the Soil Consultants 2012 investigation¹, which recorded 0.5m of Made Ground in BH1 towards the east of the site, and 2.1m of Made Ground in WS2 in the south-west. Head comprising slightly sandy cobbly clay was only encountered in WS204 in the far east of the site.

The underlying Weathered London Clay Formation comprised often sandy clay, typically soft to firm, becoming firm to stiff with depth.

Permeability Testing

Rising head permeability tests were undertaken in three of the window sampler boreholes. Over a significant period of time (between 2 and 4.5 hours) none of the tests completed (i.e. the water did not recover to 75% its original volume) however, permeability results have been summarised in Table 4, below, and are consistent with values for a predominantly silty sandy clay.

Table 3. Summary of Permeability Results.

Location	Length of Test (hours)	Measured Rise in Water Level (m)	Head Recovery (%)	Permeability (m/sec)
WS201	4.5	0.12	10	3.4×10^{-7}
WS202	2.0	0.18	6	1.1×10^{-6}
WS203	4.0	0.15	23	3.8×10^{-7}

Water Summary

The water monitoring results indicate that localised pockets of perched water are present within the Made Ground and Weathered London Clay Formation, between 0.20mbgl and 3.73mbgl (45.92mOD and 41.43mOD). The water strike recorded in borehole WS202 at 2.8mbgl occurred in a sand lens, suggesting pockets of water

are present within granular horizons. The poor recovery of water level during the rising head tests indicates a low permeability within the stratum.

Basement Foundations

A high groundwater table is not anticipated within the vicinity of the proposed basement and as such, contiguous piles would be sufficient for the basement construction. In view of the groundwater seepage encountered, consideration should be given to a narrower gap between piles (~100mm), whilst remaining compatible with installation requirements.

Ground Gases

The ground gas monitoring results indicate that steady flow was not recorded above the detection limit of the equipment of 0.1 l/hr in any exploratory hole; the maximum carbon dioxide concentration detected was 8.2% (in WS201); and methane was not detected above the instrument detection limit of 0.1% in any location. Oxygen concentrations were depleted to a minimum of 12.0% (in WS202) and the maximum Volatile Organic Compound (VOC) concentrations recorded was 1.1 parts per million (ppm) (in WS202).

Gas Screening Values (GSVs) have been calculated in accordance with CIRIA 665⁶ and BS 8485:2015+A1:2019⁷. Assuming a worst case scenario, an average maximum steady flow rate of 0.1 l/hr was used, alongside a maximum carbon dioxide concentration of 8.2% and a maximum methane concentration of 0.1%. The maximum worst credible GSVs for carbon dioxide and methane are 0.008 l/hr and 0.0001 l hr, respectively.

Methane concentrations were not recorded above 1%, however carbon dioxide concentrations elevated above 5% was consistently recorded in WS201. Given the distance of this borehole location from the proposed building development (some 15m) and the absence of steady flow detected across the site, the site is considered to conform to Characteristic Situation (CS) 1.

The risk to future site occupiers from ground gases is considered low as the site is considered to conform to CS1 and no ground gas protection measures are proposed. It is recommended that the absence of gas protection measures is approved by the project warrantors and Building Control prior to commencing construction as additional monitoring visits may be requested.

Yours sincerely



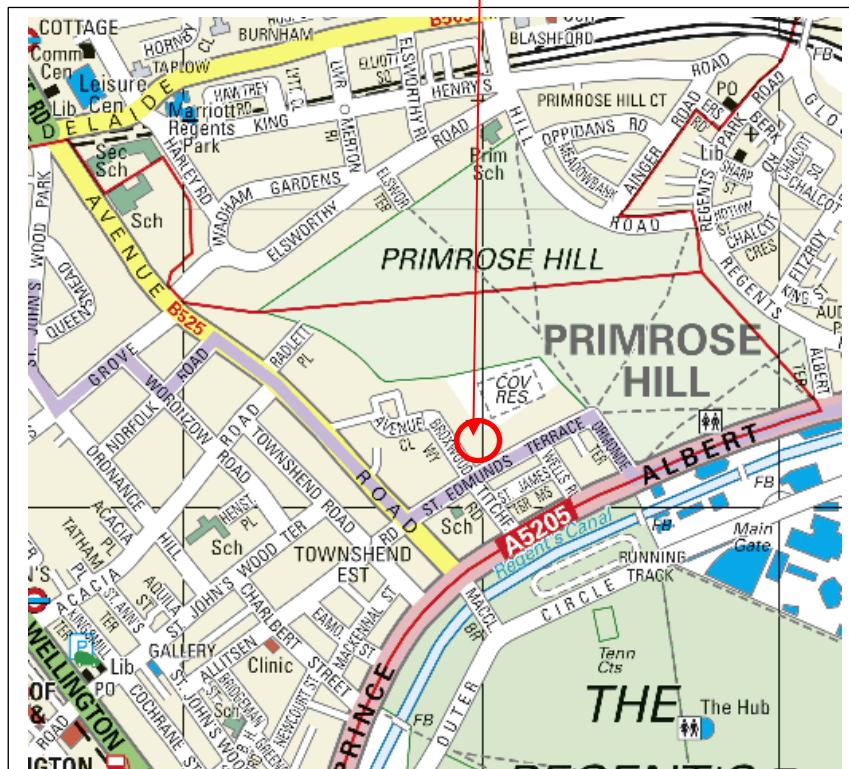
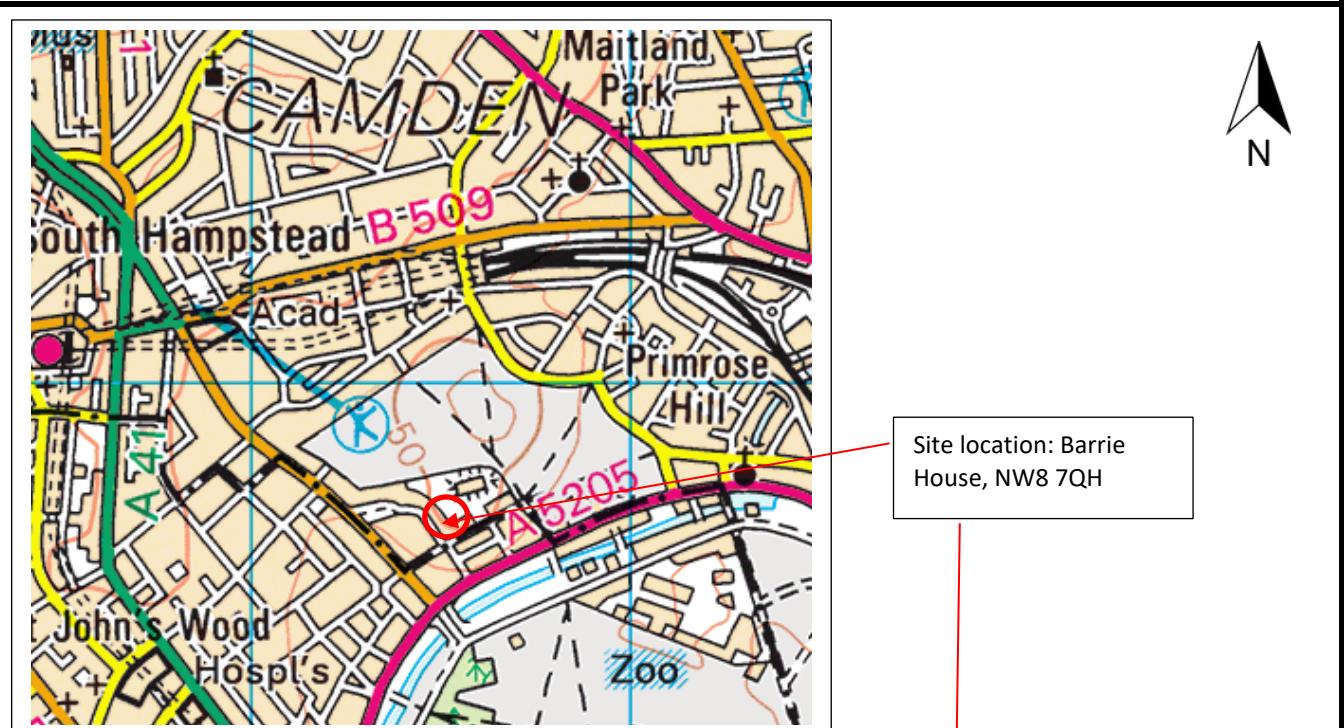
Anna Prescott, Senior Engineer
Card Geotechnics Limited

FIGURES

- Figure 1 Site Location Plan**
- Figure 2 Site Layout and Exploratory Hole Location Plan**
- Figure 3 SPT 'N₆₀' Value vs Level**
- Figure 4 Undrained Shear Strength vs Level**

⁶ CIRIA. (2007). *Assessing risks posed by hazardous ground gases to buildings*, CIRIA Report C665, London.

⁷ British Standards Institute. (2019). *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*. BH 8485:2015+A1:2019.

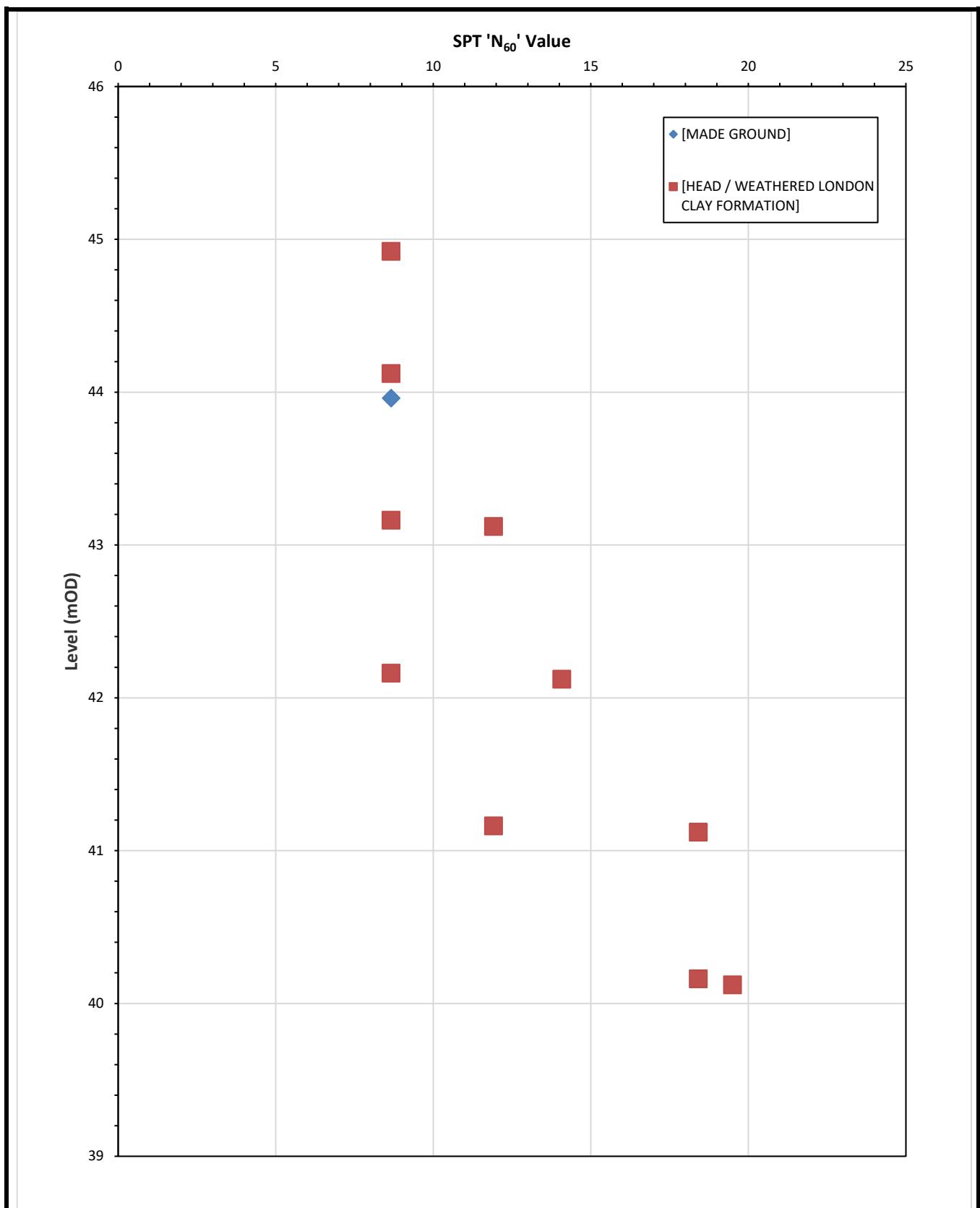


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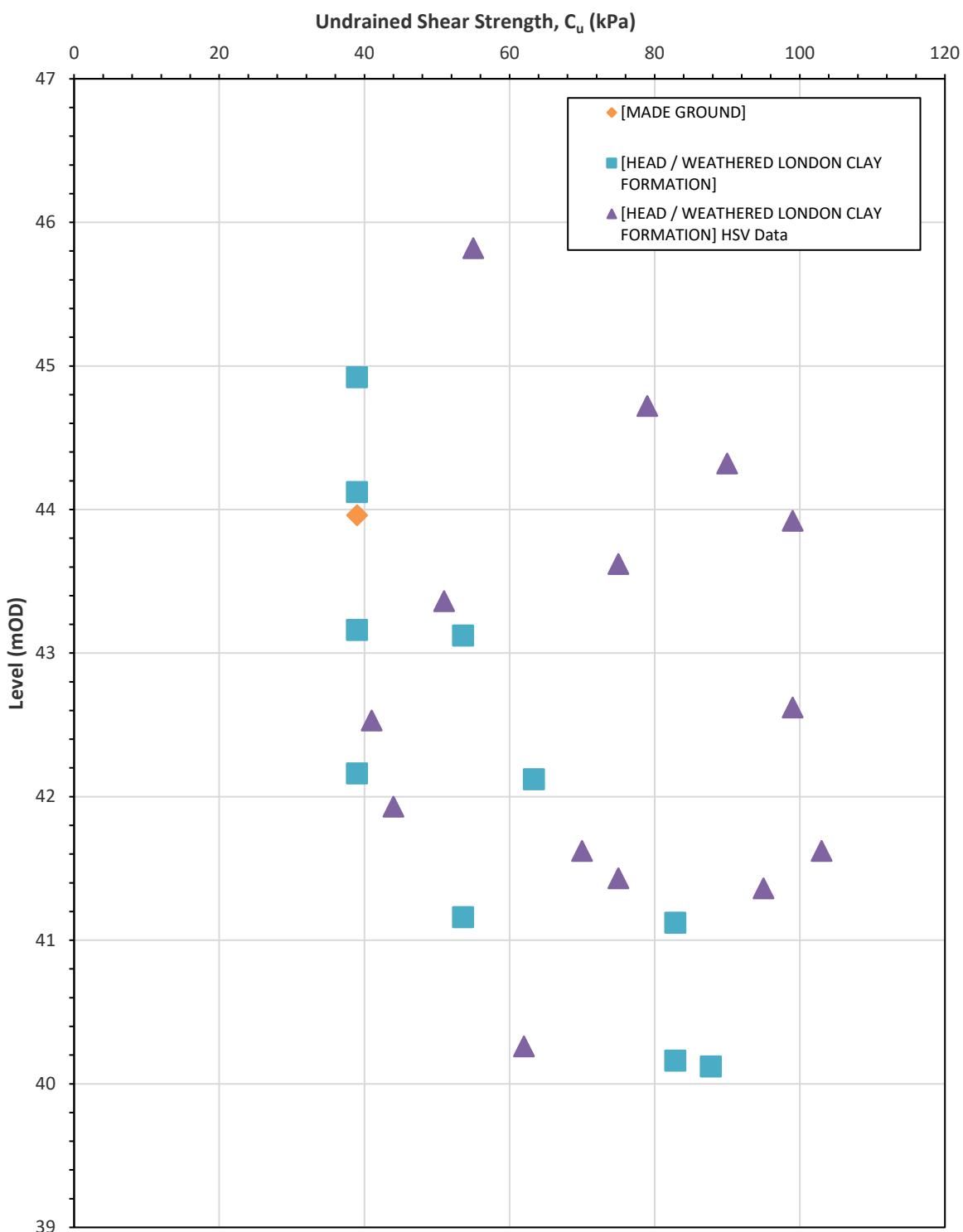
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Client Broxwood View Limited	Project Barrie House, 29 St Edmunds Terrace, London	Job No CG/28408B
	Title Site Location Plan	Figure 1





Client Broxwood View Limited	Project Barrie House, 29 St Edmunds Terrace, London	Job No CG/28408B
	Title SPT 'N₆₀' Value vs Level	Figure 3



Client Broxwood View Limited	Project Barrie House, 29 St Edmunds Terrace, London	Job No CG/28408B
	Title Undrained Shear Strength Value vs Level	Figure 4

APPENDIX F

Modelling Output Results

CARD GEOTECHNICS LIMITED
 Program: WALLAP Version 6.06 Revision A51.B69.R55
 Licensed from GEOSOLVE
 Data filename/Run ID: WALLAP_Model_Neighbouring_Properties
 Barrie House, 29 St Edmunds Terrace, London
 Basement Impact Assessment

	Sheet No. Job No. 28408B Made by : ALP Date: 17-03-2023 Checked :
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Units: kN,m

INPUT DATA

SOIL PROFILE

Stratum no.	Elevation of top of stratum	Soil types	
		Left side	Right side
1	46.00	1 Made Ground	1 Made Ground
2	44.50	2 Head /LC Undrained	2 Head /LC Undrained
3	43.50	4 LC Undrained	4 LC Undrained

SOIL PROPERTIES

-- Soil type --	Bulk density	Young's Modulus	At rest coeff.	Consol state.	Active limit	Passive limit	Cohesion
No. Description	kN/m3	Eh, kN/m2	Ko	NC/OC	Ka	Kp	kN/m2
(Datum elev.)		(dEh/dy)	(dKo/dy)	(Nu)	(Kac)	(Kpc)	(dc/dy)
1 Made Ground	18.00	15000	0.531	OC	0.298	4.393	
				(0.200)	(0.000)	(0.000)	
2 Head /LC Undrained	20.00	24000	1.000	OC	1.000	1.000	40.00u
				(0.490)	(2.389)	(2.390)	
3 Head /LC Drained	20.00	18000	1.000	OC	0.376	3.077	5.000d
				(0.200)	(1.401)	(4.665)	
4 LC Undrai.. (43.50)	20.00	24000	1.000	OC	1.000	1.000	40.00u
	(6000)			(0.490)	(2.389)	(2.390)	(10.00)
5 LC Drained (43.50)	20.00	18000	1.000	OC	0.346	3.442	5.000d
	(4500)			(0.200)	(1.340)	(5.007)	

Additional soil parameters associated with Ka and Kp

No. Description	--- parameters for Ka ---			--- parameters for Kp ---		
	Soil friction angle	Wall adhesion coeff.	Backfill angle	Soil friction angle	Wall adhesion coeff.	Backfill angle
1 Made Ground	28.00	1.000	0.00	28.00	1.000	0.00
2 Head /LC Undrained	0.00	0.500	0.00	0.00	0.500	0.00
3 Head /LC Drained	24.00	0.500	0.00	24.00	0.500	0.00
4 LC Undrained	0.00	0.500	0.00	0.00	0.500	0.00
5 LC Drained	26.00	0.500	0.00	26.00	0.500	0.00

GROUND WATER CONDITIONS

Density of water = 10.00 kN/m3

Initial water table elevation	Left side 30.00 Right side 30.00
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Automatic water pressure balancing at toe of wall : No

WALL PROPERTIES

Type of structure = Fully Embedded Wall
 Elevation of toe of wall = 36.60
 Maximum finite element length = 0.50 m
 Youngs modulus of wall E = 2.8000E+07 kN/m2
 Moment of inertia of wall I = 3.1950E-03 m4/m run
 E.I = 89460 kN.m2/m run
 Yield Moment of wall = Not defined

STRUTS and ANCHORS

Strut/ anchor no.	Elev. m	X-section Strut spacing of strut sq.m	Youngs modulus kN/m2	Free length m	Inclin (degs)	Pre- stress /strut kN	Tension allowed
1	43.65	1.00	1.000000	80000	1.00	0.00	0 Yes
2	40.30	1.00	0.950000	1.500E+07	1.00	0.00	0 Yes
3	44.50	1.00	0.300000	1.500E+07	1.00	0.00	0 Yes
4	42.10	1.00	1.000000	80000	1.00	0.00	0 Yes

SURCHARGE LOADS

Surcharge no.	Elev. m	Distance from wall m	Length parallel to wall m	Width perpend. to wall m	Surcharge kN/m2	Equiv. soil factor/	Partial Category
1	45.00	0.50(L)	20.00	1.00	10.00	=	N/A 1.00 -

Note: L = Left side, R = Right side

Limit State Categories P/U = Permanent Unfavourable

P/F = Permanent Favourable

Var = Variable (unfavourable)

CONSTRUCTION STAGES

Construction stage no.	Stage description
1	Change EI of wall to 1.0000E-03 kN.m2/m run Yield moment not defined Allow wall to relax with new modulus value
2	Apply surcharge no.1 at elevation 45.00 No analysis at this stage
3	Change EI of wall to 67096 kN.m2/m run Yield moment not defined Reset wall displacements to zero at this stage
4	Excavate to elevation 43.00 on RIGHT side
5	Install strut or anchor no.1 at elevation 43.65
6	Excavate to elevation 39.77 on RIGHT side
7	Install strut or anchor no.2 at elevation 40.30
8	Install strut or anchor no.3 at elevation 44.50
9	Remove strut or anchor no.1 at elevation 43.65
10	Change properties of soil type 2 to soil type 3 Ko pressures will not be reset
11	Change properties of soil type 4 to soil type 5 Ko pressures will not be reset
12	Change EI of wall to 47926 kN.m2/m run Yield moment not defined Allow wall to relax with new modulus value

FACTORS OF SAFETY and ANALYSIS OPTIONS

Limit State options: Serviceability Limit State

All loads and soil strengths are unfactored

Stability analysis:

Method of analysis - Strength Factor method

Factor on soil strength for calculating wall depth = 1.00

Parameters for undrained strata:

Minimum equivalent fluid density = 5.00 kN/m3

Maximum depth of water filled tension crack = 0.00 m

Bending moment and displacement calculation:

Method - Subgrade reaction model using Influence Coefficients

Open Tension Crack analysis? - No

Non-linear Modulus Parameter (L) = 9.300 m

Boundary conditions:

Length of wall (normal to plane of analysis) = 26.50 m

Width of excavation on Left side of wall = 20.00 m

Width of excavation on Right side of wall = 11.50 m

Distance to rigid boundary on Left side = 30.00 m

Distance to rigid boundary on Right side = 30.00 m

OUTPUT OPTIONS

Stage no.	Stage description	Output options	Displacement	Active, Graph.	Bending mom.	Passive output	Shear force pressures
1	Change EI of wall to 1.0000E-03kN.m ² /m	Yes	Yes	Yes			
2	Apply surcharge no.1 at elev. 45.00	No	No	No			
3	Change EI of wall to 67096kN.m ² /m run	No	No	No			
4	Excav. to elev. 43.00 on RIGHT side	Yes	Yes	Yes			
5	Install strut no.1 at elev. 43.65	Yes	Yes	Yes			
6	Excav. to elev. 39.77 on RIGHT side	Yes	Yes	Yes			
7	Install strut no.2 at elev. 40.30	Yes	Yes	Yes			
8	Install strut no.3 at elev. 44.50	Yes	Yes	Yes			
9	Remove strut no.1 at elev. 43.65	Yes	Yes	Yes			
10	Change soil type 2 to soil type 3	Yes	Yes	Yes			
11	Change soil type 4 to soil type 5	Yes	Yes	Yes			
12	Change EI of wall to 47926kN.m ² /m run	Yes	Yes	Yes			
*	Summary output	Yes	-	Yes			

Program WALLAP - Copyright (C) 2017 by DL Borin, distributed by GEOSOLVE
150 St. Alphonsus Road, London SW4 7BW, UK www.geosolve.co.uk

CARD GEOTECHNICS LIMITED | Sheet No.
 Program: WALLAP Version 6.06 Revision A51.B69.R55 | Job No. 28408B
 Licensed from GEOSOLVE | Made by : ALP
 Data filename/Run ID: WALLAP_Model_Neighbouring_Properties | Date: 17-03-2023
 Barrie House, 29 St Edmunds Terrace, London | Checked :
 Basement Impact Assessment

 Units: kN,m

Stage No. 12 Change EI of wall to 47926 kN.m²/m run
 Yield moment not defined
 Allow wall to relax with new modulus value

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method
 Factor of safety on soil strength

			FoS for toe elev. = 36.60	Toe elev. for FoS = 1.000			
Stage	---	G.L.	Strut Factor	Moment	Toe	Wall	Direction
No.	Act.	Pass.	Elev.	of equilib.	elev.	Penetr	of failure
12	46.00	39.77		Safety at elev.	-ation		

More than one strut. No FoS calc.

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 26.50m

Subgrade reaction model - Boussinesq Influence coefficients

Soil deformations are elastic until the active or passive limit is reached

Open Tension Crack analysis - No

Rigid boundaries: Left side 30.00 from wall
 Right side 30.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces are to be multiplied by a factor of 1.35 to obtain values for structural design. See summary for factored values.

*** Wall displacements reset to zero at stage 3

Node no.	Y coord	Nett pressure kN/m ²	Wall disp. m	Wall rotation rad.	Shear force kN/m	Bending moment kN.m/m	Strut forces kN/m	EI of wall kN.m ² /m
1	46.00	0.00	0.005	-1.83E-04	0.0	0.0		47926
2	45.50	23.44	0.005	-1.84E-04	5.9	0.1		47926
3	45.00	17.11	0.006	-2.16E-04	16.0	6.1		47926
4	44.50	11.06	0.006	-3.33E-04	23.0	16.3	57.9	47926
		13.03	0.006	-3.33E-04	-34.8	16.3		
5	44.08	9.59	0.006	-4.18E-04	-30.0	2.5		47926
6	43.65	11.64	0.006	-3.90E-04	-25.5	-9.5		47926
7	43.50	12.36	0.006	-3.56E-04	-23.7	-13.2		47926
8	43.00	14.77	0.006	-1.79E-04	-16.9	-21.9		47926
9	42.50	17.80	0.006	7.85E-05	-8.8	-28.9		47926
10	42.00	21.14	0.006	3.84E-04	0.9	-31.4		47926
11	41.50	24.49	0.006	6.88E-04	12.3	-28.6		47926
12	41.00	27.85	0.005	9.19E-04	25.4	-17.6		47926
13	40.65	31.54	0.005	1.00E-03	35.8	-7.0		47926
14	40.30	40.63	0.005	9.92E-04	48.4	7.5	75.4	47926
		40.63	0.005	9.92E-04	-27.0	7.5		
15	40.04	47.80	0.005	9.60E-04	-15.3	2.0		47926
16	39.77	55.10	0.004	9.50E-04	-1.6	-0.1		47926
		30.48	0.004	9.50E-04	-1.6	-0.1		
17	39.39	15.02	0.004	9.41E-04	7.1	1.2		47926
18	39.00	-0.38	0.004	9.15E-04	9.9	4.6		47926
19	38.50	-20.62	0.003	8.45E-04	4.7	8.4		47926
20	38.00	-12.28	0.003	7.58E-04	-3.5	8.3		47926
21	37.50	-1.53	0.002	6.89E-04	-7.0	5.0		47926
22	37.05	8.31	0.002	6.59E-04	-5.5	1.7		47926
23	36.60	15.91	0.002	6.51E-04	0.0	0.0		---

At elev. 44.50 Strut force = 57.9 kN/strut = 57.9 kN/m run
 At elev. 40.30 Strut force = 75.4 kN/strut = 75.4 kN/m run

(continued)

Stage No.12 Change EI of wall to 47926 kN.m²/m run
Yield moment not defined
Allow wall to relax with new modulus value

Units: kN, m

Summary of results

LIMIT STATE PARAMETERS

Limit State: Serviceability Limit State
All loads and soil strengths are unfactored

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method

Factor of safety on soil strength

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 Barrie House, 29 St Edmunds Terrace, London
 Basement Impact Assessment

	Sheet No. Job No. 28408B Made by : ALP Date: 17-03-2023 Checked :
--	---

Units: kN,m

Summary of results

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 26.50m

Subgrade reaction model - Boussinesq Influence coefficients

Soil deformations are elastic until the active or passive limit is reached

Open Tension Crack analysis - No

Rigid boundaries: Left side 30.00 from wall
 Right side 30.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Bending moment, shear force and displacement envelopes

Node no.	Y coord	Displacement	---- Bending moment ----				----- Shear force -----			
			Calculated		Factored		Calculated		Factored	
			max. m	min. m	max. kN.m/m	min. kN.m/m	max. kN/m	min. kN/m	max. kN/m	min. kN/m
1	46.00	0.009	0.000	0	0	0	0	0	0	0
2	45.50	0.008	0.000	0	0	0	0	6	0	8
3	45.00	0.007	0.000	6	0	8	0	16	0	22
4	44.50	0.006	0.000	17	0	22	0	23	-39	31
5	44.08	0.006	0.000	22	0	29	0	23	-34	31
6	43.65	0.006	0.000	32	-12	44	-16	28	-48	38
7	43.50	0.006	0.000	25	-16	34	-22	16	-46	22
8	43.00	0.006	0.000	25	-27	34	-36	24	-40	33
9	42.50	0.006	0.000	33	-35	45	-48	9	-31	12
10	42.00	0.006	0.000	34	-40	46	-54	1	-22	1
11	41.50	0.006	0.000	31	-39	42	-53	12	-11	17
12	41.00	0.005	0.000	25	-36	34	-49	25	-12	34
13	40.65	0.005	0.000	21	-34	28	-46	36	-12	48
14	40.30	0.005	0.000	17	-28	23	-38	48	-27	65
15	40.04	0.005	0.000	14	-20	18	-28	36	-15	48
16	39.77	0.004	0.000	11	-9	15	-12	49	-10	66
17	39.39	0.004	0.000	14	-0	19	-1	30	-8	40
18	39.00	0.004	0.000	19	0	26	0	14	-6	19
19	38.50	0.003	0.000	19	0	26	0	6	-5	8
20	38.00	0.003	0.000	14	0	19	0	0	-12	0
21	37.50	0.002	0.000	8	0	10	0	0	-12	0
22	37.05	0.002	0.000	2	0	3	0	0	-8	0
23	36.60	0.002	0.000	0	-0	0	-0	0	-0	-0

Summary of results (continued)

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Maximum and minimum bending moment and shear force at each stage

Stage no.	Bending moment				Shear force			
	Calculated max. elev. kN.m/m	Factored min. elev. kN.m/m	Calculated max. elev. kN.m/m	Factored min. elev. kN/m	Calculated max. elev. kN/m	Factored min. elev. kN/m	Calculated max. elev. kN/m	Factored min. elev. kN/m
1	0	46.00	0	46.00	0	0	46.00	0
2	No calculation at this stage							
3	No calculation at this stage							
4	34	42.00	-0	36.60	46	-0	24	43.00
5	No calculation at this stage						-12	40.65
6	32	43.65	-36	41.00	44	-49	49	39.77
7	No calculation at this stage						-48	43.65
8	No calculation at this stage						33	-16
9	19	39.00	-40	42.00	26	-54	42	40.30
10	19	39.00	-40	42.00	26	-54	42	40.30
11	16	44.50	-34	42.00	22	-46	48	40.30
12	16	44.50	-31	42.00	22	-42	48	40.30

Maximum and minimum displacement at each stage

Stage no.	Displacement				Stage description
	maximum m	elev. m	minimum m	elev. m	
1	0.000	46.00	0.000	46.00	Change EI of wall to 1.0000E-03kN.m ² /m run
2	No calculation at this stage				Apply surcharge no.1 at elev. 45.00
3	Wall displacements reset to zero				Change EI of wall to 67096kN.m ² /m run
4	0.009	46.00	0.000	46.00	Excav. to elev. 43.00 on RIGHT side
5	No calculation at this stage				Install strut no.1 at elev. 43.65
6	0.006	46.00	0.000	46.00	Excav. to elev. 39.77 on RIGHT side
7	No calculation at this stage				Install strut no.2 at elev. 40.30
8	No calculation at this stage				Install strut no.3 at elev. 44.50
9	0.006	42.50	0.000	46.00	Remove strut no.1 at elev. 43.65
10	0.006	42.50	0.000	46.00	Change soil type 2 to soil type 3
11	0.006	42.50	0.000	46.00	Change soil type 4 to soil type 5
12	0.006	42.50	0.000	46.00	Change EI of wall to 47926kN.m ² /m run

Summary of results (continued)

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Strut forces at each stage (horizontal components)

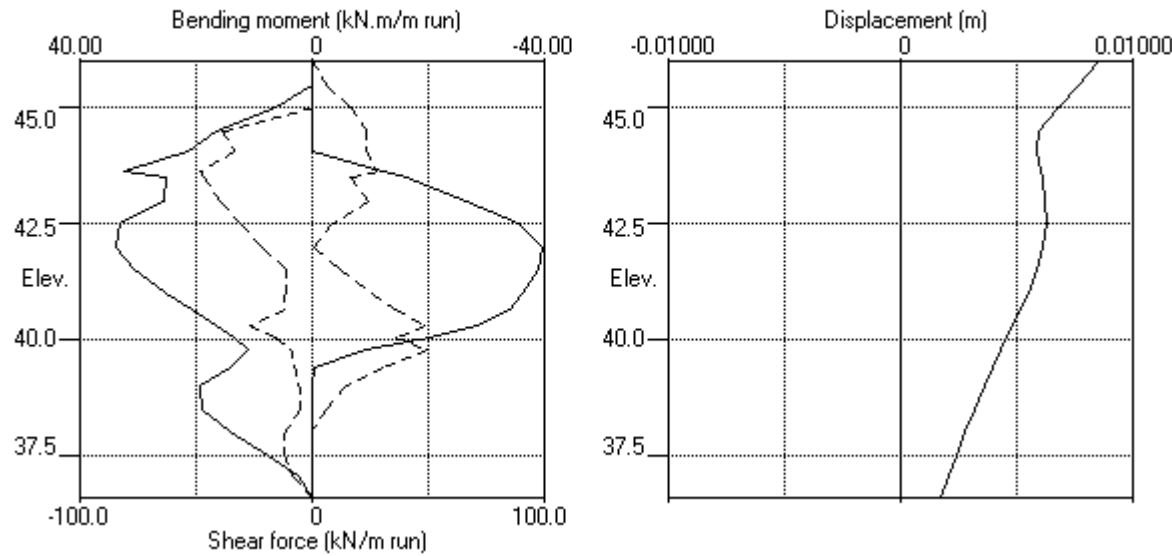
Stage no.	Strut no. 1			Strut no. 2			Strut no. 3		
	at elev. 43.65			at elev. 40.30			at elev. 44.50		
	--Calculated--	Factored		--Calculated--	Factored		--Calculated--	Factored	
	kN per m run	kN per strut		kN per m run	kN per strut		kN per m run	kN per strut	
6	76	76	103	---	---	---	---	---	---
9	---	---	---	29	29	39	62	62	84
10	---	---	---	29	29	39	62	62	84
11	---	---	---	71	71	97	59	59	80
12	---	---	---	75	75	102	58	58	78

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Basement Impact Assessment

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Units: kN,m

Bending moment, shear force, displacement envelopes



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 Barrie House, 29 St Edmunds Terrace, London
 Pad A / C Foundations Assessment

	Sheet No. Job No. 28408B Made by : ALP Date: 17-03-2023 Checked :
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Units: kN,m

INPUT DATA

SOIL PROFILE

Stratum no.	Elevation of top of stratum	Soil types	
		Left side	Right side
1	45.00	1 Made Ground	1 Made Ground
2	44.50	2 Head /LC Undrained	2 Head /LC Undrained
3	43.50	4 LC Undrained	4 LC Undrained

SOIL PROPERTIES

-- Soil type --	Bulk density	Young's Modulus	At rest coeff.	Consol state.	Active limit	Passive limit	Cohesion	
No. Description	kN/m3	Eh, kN/m2	(dEh/dy)	Ko	NC/OC	Ka	Kp	kN/m2
(Datum elev.)		(dEh/dy)	(dKo/dy)	(Nu)	(Kac)	(Kpc)	(dc/dy)	
1 Made Ground	18.00	15000	0.531	OC	0.298	4.393		
				(0.200)	(0.000)	(0.000)		
2 Head /LC Undrained	20.00	24000	1.000	OC	1.000	1.000	40.00u	
				(0.490)	(2.389)	(2.390)		
3 Head /LC Drained	20.00	18000	1.000	OC	0.376	3.077	5.000d	
				(0.200)	(1.401)	(4.665)		
4 LC Undrai.. (43.50)	20.00	24000	1.000	OC	1.000	1.000	40.00u	
		(6000)		(0.490)	(2.389)	(2.390)	(10.00)	
5 LC Drained (43.50)	20.00	18000	1.000	OC	0.346	3.442	5.000d	
		(4500)		(0.200)	(1.340)	(5.007)		

Additional soil parameters associated with Ka and Kp

----- Soil type -----	--- parameters for Ka ---			--- parameters for Kp ---		
	Soil friction	Wall adhesion	Backfill	Soil friction	Wall adhesion	Backfill
No. Description	angle	coeff.	angle	angle	coeff.	angle
1 Made Ground	28.00	1.000	0.00	28.00	1.000	0.00
2 Head /LC Undrained	0.00	0.500	0.00	0.00	0.500	0.00
3 Head /LC Drained	24.00	0.500	0.00	24.00	0.500	0.00
4 LC Undrained	0.00	0.500	0.00	0.00	0.500	0.00
5 LC Drained	26.00	0.500	0.00	26.00	0.500	0.00

GROUND WATER CONDITIONS

Density of water = 10.00 kN/m3

Initial water table elevation	Left side 30.00	Right side 30.00
-------------------------------	-----------------	------------------

Automatic water pressure balancing at toe of wall : No

WALL PROPERTIES

Type of structure = Fully Embedded Wall
 Elevation of toe of wall = 28.60
 Maximum finite element length = 1.00 m
 Youngs modulus of wall E = 3.0000E+07 kN/m2
 Moment of inertia of wall I = 9.0880E-03 m4/m run
 E.I = 272640 kN.m2/m run
 Yield Moment of wall = Not defined

STRUTS and ANCHORS

Strut/ anchor no.	Elev.	Strut spacing m	X-section area sq.m	Youngs modulus kN/m2	Free length m	Inclin -ation (degs)	Pre- stress /strut kN	Tension allowed
1	43.65	1.00	1.000000	80000	1.00	0.00	0	Yes
2	40.30	1.00	0.950000	1.500E+07	1.00	0.00	0	Yes
3	44.50	1.00	0.300000	1.500E+07	1.00	0.00	0	Yes
4	42.10	1.00	1.000000	80000	1.00	0.00	0	Yes

SURCHARGE LOADS

Surcharge no.	Elev.	Distance from wall	Length parallel to wall	Width perpend. to wall	Surcharge kN/m2	-----	Equiv. soil factor/	Partial Category
1	45.00	1.25(L)	20.00	20.00	5.00	=	N/A	1.00 -
2	43.70	0.25(L)	2.00	2.00	220.00	=	N/A	1.00 -
3	43.70	0.25(L)	2.00	2.00	50.00	=	N/A	1.00 -

Note: L = Left side, R = Right side

Limit State Categories P/U = Permanent Unfavourable

P/F = Permanent Favourable

Var = Variable (unfavourable)

CONSTRUCTION STAGES

Construction stage no.	Stage description
1	Change EI of wall to 1.0000E-03 kN.m2/m run Yield moment not defined Allow wall to relax with new modulus value
2	Apply surcharge no.1 at elevation 45.00 No analysis at this stage
3	Apply surcharge no.2 at elevation 43.70 No analysis at this stage
4	Change EI of wall to 190852 kN.m2/m run Yield moment not defined Reset wall displacements to zero at this stage
5	Excavate to elevation 43.00 on RIGHT side
6	Install strut or anchor no.1 at elevation 43.65
7	Excavate to elevation 41.60 on RIGHT side
8	Install strut or anchor no.4 at elevation 42.10
9	Excavate to elevation 39.77 on RIGHT side
10	Install strut or anchor no.2 at elevation 40.30
11	Remove strut or anchor no.4 at elevation 42.10
12	Install strut or anchor no.3 at elevation 44.50
13	Remove strut or anchor no.1 at elevation 43.65
14	Change properties of soil type 2 to soil type 3 Ko pressures will not be reset
15	Change properties of soil type 4 to soil type 5 Ko pressures will not be reset
16	Change EI of wall to 136323 kN.m2/m run Yield moment not defined Allow wall to relax with new modulus value
17	Apply surcharge no.3 at elevation 43.70

FACTORS OF SAFETY and ANALYSIS OPTIONS

Limit State options: Serviceability Limit State

All loads and soil strengths are unfactored

Stability analysis:

Method of analysis - Strength Factor method

Factor on soil strength for calculating wall depth = 1.00

Parameters for undrained strata:

Minimum equivalent fluid density = 5.00 kN/m3

Maximum depth of water filled tension crack = 0.00 m

Bending moment and displacement calculation:

Method - Subgrade reaction model using Influence Coefficients

Open Tension Crack analysis? - No

Non-linear Modulus Parameter (L) = 15.00 m

Boundary conditions:

Length of wall (normal to plane of analysis) = 26.50 m

Width of excavation on Left side of wall = 20.00 m
Width of excavation on Right side of wall = 11.50 m

Distance to rigid boundary on Left side = 30.00 m
Distance to rigid boundary on Right side = 30.00 m

OUTPUT OPTIONS

Stage no.	Stage description	Displacement	Active, Passive	Graph. output pressures
1	Change EI of wall to 1.0000E-03kN.m2/m	No	No	No
2	Apply surcharge no.1 at elev. 45.00	No	No	No
3	Apply surcharge no.2 at elev. 43.70	No	No	No
4	Change EI of wall to 190852kN.m2/m run	Yes	Yes	Yes
5	Excav. to elev. 43.00 on RIGHT side	Yes	Yes	Yes
6	Install strut no.1 at elev. 43.65	Yes	Yes	Yes
7	Excav. to elev. 41.60 on RIGHT side	Yes	Yes	Yes
8	Install strut no.4 at elev. 42.10	Yes	Yes	Yes
9	Excav. to elev. 39.77 on RIGHT side	Yes	Yes	Yes
10	Install strut no.2 at elev. 40.30	Yes	Yes	Yes
11	Remove strut no.4 at elev. 42.10	No	No	No
12	Install strut no.3 at elev. 44.50	Yes	Yes	Yes
13	Remove strut no.1 at elev. 43.65	Yes	Yes	Yes
14	Change soil type 2 to soil type 3	Yes	Yes	Yes
15	Change soil type 4 to soil type 5	Yes	Yes	Yes
16	Change EI of wall to 136323kN.m2/m run	Yes	Yes	Yes
17	Apply surcharge no.3 at elev. 43.70	Yes	Yes	Yes
*	Summary output	Yes	-	Yes

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Units: kN,m

Stage No. 17 Apply surcharge no.3 at elevation 43.70

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method
 Factor of safety on soil strength

			FoS for toe elev. = 28.60	Toe elev. for FoS = 1.000			
Stage No.	--- G.L. ---	Strut Act. Pass. Elev.	Factor of equilib.	Moment Safety at elev.	Toe elev.	Wall Penetr	Direction of failure
17	45.00	39.77		More than one strut. No FoS calc.			

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 26.50m

Subgrade reaction model - Boussinesq Influence coefficients

Soil deformations are elastic until the active or passive limit is reached

Open Tension Crack analysis - No

Rigid boundaries: Left side 30.00 from wall
 Right side 30.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces are to be multiplied by a factor of 1.35 to obtain values for structural design. See summary for factored values.

*** Wall displacements reset to zero at stage 4

Node no.	Y coord	Nett pressure kN/m ²	Wall disp. m	Wall rotation rad.	Shear force kN/m	Bending moment kN.m/m	Strut forces kN/m	EI of wall kN.m ² /m
1	45.00	0.00	0.010	-1.97E-04	0.0	0.0		136323
2	44.50	7.28	0.011	-1.97E-04	1.8	0.1	73.6	136323
		12.24	0.011	-1.97E-04	-71.7	0.1		
3	43.70	5.80	0.011	-4.24E-05	-64.5	-53.6		136323
4	43.65	6.05	0.011	-2.24E-05	-64.2	-56.9		136323
5	43.50	16.20	0.011	4.46E-05	-62.6	-66.5		136323
		14.65	0.011	4.46E-05	-62.6	-66.5		
6	43.00	67.97	0.011	3.29E-04	-41.9	-90.5		136323
7	42.10	70.16	0.010	9.50E-04	20.3	-100.4		136323
8	41.60	61.25	0.009	1.27E-03	53.1	-82.2		136323
9	40.95	56.64	0.009	1.55E-03	91.4	-35.6		136323
10	40.30	59.94	0.008	1.54E-03	129.3	35.1	165.5	136323
		59.94	0.008	1.54E-03	-36.2	35.1		
11	39.77	66.42	0.007	1.42E-03	-2.7	25.1		136323
		41.99	0.007	1.42E-03	-2.7	25.1		
12	38.89	-3.19	0.006	1.23E-03	14.4	32.1		136323
13	38.00	-16.46	0.005	1.00E-03	5.7	40.8		136323
14	37.00	-6.49	0.004	7.28E-04	-5.7	38.0		136323
15	36.00	-0.18	0.003	5.01E-04	-9.1	28.4		136323
16	35.00	2.57	0.003	3.46E-04	-7.9	18.2		136323
17	34.00	2.93	0.002	2.53E-04	-5.1	10.5		136323
18	33.00	2.13	0.002	2.03E-04	-2.6	5.8		136323
19	32.00	1.07	0.002	1.76E-04	-1.0	3.2		136323
20	31.00	0.25	0.002	1.60E-04	-0.3	1.8		136323
21	30.00	-0.11	0.002	1.51E-04	-0.3	0.9		136323
22	29.30	0.05	0.002	1.48E-04	-0.3	0.4		136323
23	28.60	0.79	0.001	1.47E-04	-0.0	0.0		---

At elev. 44.50 Strut force = 73.6 kN/strut = 73.6 kN/m run

At elev. 40.30 Strut force = 165.5 kN/strut = 165.5 kN/m run

Run ID. WALLAP_Model_SLS_PADAC_AGcheck
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(continued)

Stage No.17 Apply surcharge no.3 at elevation 43.70

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 Units: kN,m

Summary of results

LIMIT STATE PARAMETERS

Limit State: Serviceability Limit State
 All loads and soil strengths are unfactored

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method

Factor of safety on soil strength

			FoS for toe elev. = 28.60	Toe elev. for FoS = 1.000			
Stage No.	--- G.L. --- Act.	Strut Pass.	Factor Elev.	Moment of equilib.	Toe elev.	Wall Penetr Safety at elev. Conditions not suitable for FoS calc.	Direction of failure
1	45.00	45.00	Cant.			No analysis at this stage	
2	45.00	45.00				No analysis at this stage	
3	45.00	45.00				No analysis at this stage	
4	45.00	45.00				No analysis at this stage	
5	45.00	43.00	Cant.	4.350	30.84	42.45	0.55 L to R
6	45.00	43.00				No analysis at this stage	
7	45.00	41.60	43.65	8.719	n/a	41.41	0.19 L to R
8	45.00	41.60				No analysis at this stage	

All remaining stages have more than one strut - FoS calculation n/a

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 | Checked :

 Units: kN,m

Summary of results

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 26.50m

Subgrade reaction model - Boussinesq Influence coefficients

Soil deformations are elastic until the active or passive limit is reached

Open Tension Crack analysis - No

Rigid boundaries: Left side 30.00 from wall
 Right side 30.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Bending moment, shear force and displacement envelopes

Node no.	Y coord	Displacement	---- Bending moment ----				----- Shear force -----			
			Calculated		Factored		Calculated		Factored	
			max. m	min. m	max. kN.m/m	min. kN.m/m	max. kN/m	min. kN/m	max. kN/m	min. kN/m
1	45.00	0.011	0.000	0	0	0	0	0	0	0
2	44.50	0.011	0.000	0	0	0	0	2	-74	3
3	43.70	0.011	0.000	7	-54	9	-73	11	-66	14
4	43.65	0.011	0.000	7	-58	10	-78	11	-95	15
5	43.50	0.011	0.000	3	-67	4	-91	6	-94	8
6	43.00	0.011	0.000	12	-93	17	-125	28	-75	37
7	42.10	0.010	0.000	36	-108	49	-146	27	-68	37
8	41.60	0.009	0.000	49	-95	66	-128	63	-34	85
9	40.95	0.009	0.000	62	-67	83	-91	91	0	123
10	40.30	0.008	0.000	68	-52	92	-70	129	-36	175
11	39.77	0.007	0.000	68	-22	92	-29	74	-3	100
12	38.89	0.006	0.000	60	0	81	0	41	-11	56
13	38.00	0.005	0.000	58	0	79	0	15	-15	20
14	37.00	0.004	0.000	51	0	69	0	0	-14	0
15	36.00	0.003	0.000	41	0	55	0	0	-13	0
16	35.00	0.003	0.000	28	0	38	0	0	-12	0
17	34.00	0.002	0.000	17	0	22	0	0	-9	0
18	33.00	0.002	0.000	9	0	13	0	0	-6	0
19	32.00	0.002	0.000	5	0	7	0	0	-3	0
20	31.00	0.002	0.000	3	0	4	0	0	-1	0
21	30.00	0.002	0.000	1	0	1	0	0	-1	0
22	29.30	0.002	0.000	0	0	1	0	0	-1	0
23	28.60	0.001	0.000	0	-0	0	-0	0	-0	-0

Summary of results (continued)

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Maximum and minimum bending moment and shear force at each stage

Stage no.	Bending moment				Shear force			
	Calculated max. elev. kN.m/m	Factored min. elev. kN.m/m	Calculated max. elev. kN.m/m	Factored min. elev. kN/m	Calculated max. elev. kN/m	Factored min. elev. kN/m	Calculated max. elev. kN/m	Factored min. elev. kN/m
1	0	45.00	0	45.00	0	0	0	0
2	No calculation at this stage							
3	No calculation at this stage							
4	No calculation at this stage							
5	68	39.77	-0	28.60	92	-0	28	43.00
6	No calculation at this stage							
7	60	38.89	-44	42.10	81	-60	63	41.60
8	No calculation at this stage							
9	51	37.00	-67	40.95	69	-91	74	39.77
10	No calculation at this stage							
11	55	38.00	-88	42.10	74	-119	92	40.30
12	No calculation at this stage							
13	58	38.00	-108	42.10	79	-146	114	40.30
14	58	38.00	-108	42.10	79	-146	114	40.30
15	47	37.00	-100	42.10	63	-136	119	40.30
16	41	38.00	-95	42.10	56	-128	119	40.30
17	41	38.00	-100	42.10	55	-136	129	40.30

Maximum and minimum displacement at each stage

Stage no.	Displacement		Stage description
	maximum elev. m	minimum elev. m	
1	0.000	45.00	Change EI of wall to 1.0000E-03kN.m ² /m run
2	No calculation at this stage		Apply surcharge no.1 at elev. 45.00
3	No calculation at this stage		Apply surcharge no.2 at elev. 43.70
4	Wall displacements reset to zero		Change EI of wall to 190852kN.m ² /m run
5	0.011	45.00	Excav. to elev. 43.00 on RIGHT side
6	No calculation at this stage		Install strut no.1 at elev. 43.65
7	0.011	45.00	Excav. to elev. 41.60 on RIGHT side
8	No calculation at this stage		Install strut no.4 at elev. 42.10
9	0.010	45.00	Excav. to elev. 39.77 on RIGHT side
10	No calculation at this stage		Install strut no.2 at elev. 40.30
11	0.011	45.00	Remove strut no.4 at elev. 42.10
12	No calculation at this stage		Install strut no.3 at elev. 44.50
13	0.011	45.00	Remove strut no.1 at elev. 43.65
14	0.011	45.00	Change soil type 2 to soil type 3
15	0.011	45.00	Change soil type 4 to soil type 5
16	0.011	43.70	Change EI of wall to 136323kN.m ² /m run
17	0.011	43.65	Apply surcharge no.3 at elev. 43.70

Summary of results (continued)

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Strut forces at each stage (horizontal components)

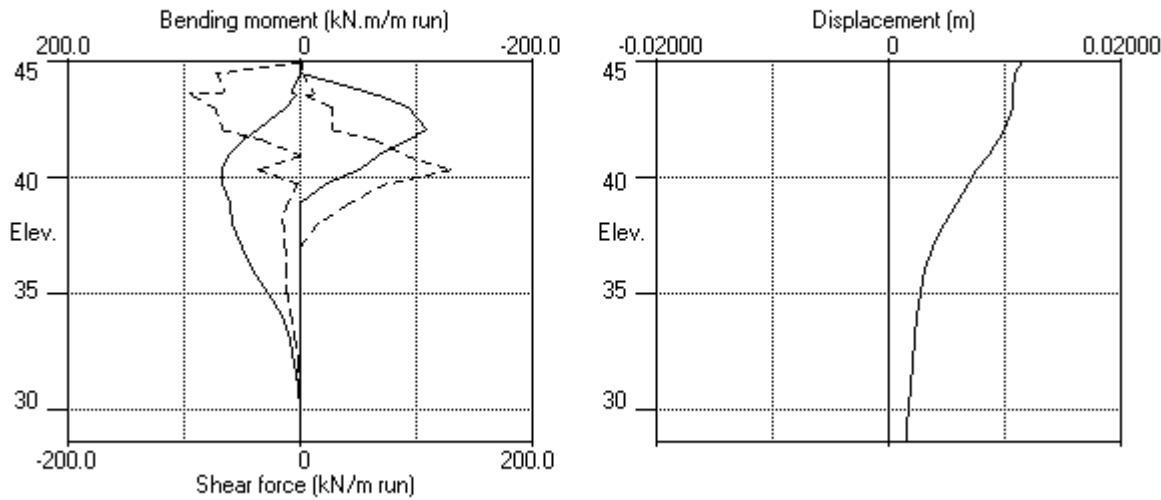
Stage no.	Strut no. 1			Strut no. 2			Strut no. 3		
	at elev. 43.65			at elev. 40.30			at elev. 44.50		
	--Calculated--	Factored		--Calculated--	Factored		--Calculated--	Factored	
	kN per m run	kN per strut		kN per m run	kN per strut		kN per m run	kN per strut	
7	71	71	96	---	---	---	---	---	---
9	72	72	98	---	---	---	---	---	---
11	104	104	141	65	65	88	---	---	---
13	---	---	---	96	96	130	75	75	101
14	---	---	---	97	97	130	75	75	102
15	---	---	---	142	142	192	73	73	98
16	---	---	---	150	150	202	69	69	93
17	---	---	---	166	166	223	74	74	99
Stage no.	Strut no. 4								
	at elev. 42.10								
	--Calculated--	Factored							
	kN per m run	kN per strut							
9	91	91	123						

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Pad A / C Foundations Assessment

| Sheet No.
| Job No. 28408B
| Made by : ALP
| Date: 17-03-2023
Checked :

Units: kN,m

Bending moment, shear force, displacement envelopes



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 Pad B Foundations Assessment

| Sheet No.
 | Job No. 28408B
 | Made by : ALP
 | Date: 17-03-2023
 | Checked :

Units: kN,m

INPUT DATA

SOIL PROFILE

Stratum no.	Elevation of top of stratum	Soil types	
		Left side	Right side
1	45.00	1 Made Ground	1 Made Ground
2	44.50	2 Head /LC Undrained	2 Head /LC Undrained
3	43.50	4 LC Undrained	4 LC Undrained

SOIL PROPERTIES

-- Soil type --	Bulk density	Young's Modulus	At rest coeff.	Consol state.	Active limit	Passive limit	Cohesion
No. Description	kN/m3	Eh, kN/m2	Ko	NC/OC	Ka	Kp	kN/m2
(Datum elev.)		(dEh/dy)	(dKo/dy)	(Nu)	(Kac)	(Kpc)	(dc/dy)
1 Made Ground	18.00	15000	0.531	OC	0.298	4.393	
				(0.200)	(0.000)	(0.000)	
2 Head /LC Undrained	20.00	24000	1.000	OC	1.000	1.000	40.00u
				(0.490)	(2.389)	(2.390)	
3 Head /LC Drained	20.00	18000	1.000	OC	0.376	3.077	5.000d
				(0.200)	(1.401)	(4.665)	
4 LC Undrai.. (43.50)	20.00	24000	1.000	OC	1.000	1.000	40.00u
	(6000)			(0.490)	(2.389)	(2.390)	(10.00)
5 LC Drained (43.50)	20.00	18000	1.000	OC	0.346	3.442	5.000d
	(4500)			(0.200)	(1.340)	(5.007)	

Additional soil parameters associated with Ka and Kp

No. Description	--- parameters for Ka ---			--- parameters for Kp ---		
	Soil friction angle	Wall adhesion coeff.	Backfill angle	Soil friction angle	Wall adhesion coeff.	Backfill angle
1 Made Ground	28.00	1.000	0.00	28.00	1.000	0.00
2 Head /LC Undrained	0.00	0.500	0.00	0.00	0.500	0.00
3 Head /LC Drained	24.00	0.500	0.00	24.00	0.500	0.00
4 LC Undrained	0.00	0.500	0.00	0.00	0.500	0.00
5 LC Drained	26.00	0.500	0.00	26.00	0.500	0.00

GROUND WATER CONDITIONS

Density of water = 10.00 kN/m3

Initial water table elevation	Left side	Right side
	30.00	30.00

Automatic water pressure balancing at toe of wall : No

WALL PROPERTIES

Type of structure = Fully Embedded Wall
 Elevation of toe of wall = 28.60
 Maximum finite element length = 1.00 m
 Youngs modulus of wall E = 3.0000E+07 kN/m2
 Moment of inertia of wall I = 9.0880E-03 m4/m run
 E.I = 272640 kN.m2/m run
 Yield Moment of wall = Not defined

STRUTS and ANCHORS

Strut/ anchor no.	Elev.	X-section Strut spacing m	area of strut sq.m	Youngs modulus kN/m2	Free length m	Inclin -ation (degs)	Pre- stress /strut kN	Tension allowed
1	43.65	1.00	1.000000	80000	1.00	0.00	0	Yes
2	40.30	1.00	0.950000	1.500E+07	1.00	0.00	0	Yes
3	44.50	1.00	0.300000	1.500E+07	1.00	0.00	0	Yes
4	42.10	1.00	1.000000	80000	1.00	0.00	0	Yes

SURCHARGE LOADS

Surcharge no.	Elev.	Distance from wall	Length parallel to wall	Width perpend. to wall	Surcharge kN/m2	-----	Equiv. soil factor/	Partial Category
1	45.00	1.25(L)	20.00	20.00	5.00	=	N/A	1.00 -
2	43.70	0.25(L)	2.50	2.50	220.00	=	N/A	1.00 -
3	43.70	0.25(L)	2.50	2.50	50.00	=	N/A	1.00 -

Note: L = Left side, R = Right side

Limit State Categories P/U = Permanent Unfavourable

P/F = Permanent Favourable

Var = Variable (unfavourable)

CONSTRUCTION STAGES

Construction stage no.	Stage description
1	Change EI of wall to 1.0000E-03 kN.m2/m run Yield moment not defined Allow wall to relax with new modulus value
2	Apply surcharge no.1 at elevation 45.00 No analysis at this stage
3	Apply surcharge no.2 at elevation 43.70 No analysis at this stage
4	Change EI of wall to 190852 kN.m2/m run Yield moment not defined Reset wall displacements to zero at this stage
5	Excavate to elevation 43.00 on RIGHT side
6	Install strut or anchor no.1 at elevation 43.65
7	Excavate to elevation 41.60 on RIGHT side
8	Install strut or anchor no.4 at elevation 42.10
9	Excavate to elevation 39.77 on RIGHT side
10	Install strut or anchor no.2 at elevation 40.30
11	Remove strut or anchor no.4 at elevation 42.10
12	Install strut or anchor no.3 at elevation 44.50
13	Remove strut or anchor no.1 at elevation 43.65
14	Change properties of soil type 2 to soil type 3 Ko pressures will not be reset
15	Change properties of soil type 4 to soil type 5 Ko pressures will not be reset
16	Change EI of wall to 136323 kN.m2/m run Yield moment not defined Allow wall to relax with new modulus value
17	Apply surcharge no.3 at elevation 43.70

FACTORS OF SAFETY and ANALYSIS OPTIONS

Limit State options: Serviceability Limit State

All loads and soil strengths are unfactored

Stability analysis:

Method of analysis - Strength Factor method

Factor on soil strength for calculating wall depth = 1.00

Parameters for undrained strata:

Minimum equivalent fluid density = 5.00 kN/m3

Maximum depth of water filled tension crack = 0.00 m

Bending moment and displacement calculation:

Method - Subgrade reaction model using Influence Coefficients

Open Tension Crack analysis? - No

Non-linear Modulus Parameter (L) = 15.00 m

Boundary conditions:

Length of wall (normal to plane of analysis) = 26.50 m

Width of excavation on Left side of wall = 20.00 m
Width of excavation on Right side of wall = 11.50 m

Distance to rigid boundary on Left side = 30.00 m
Distance to rigid boundary on Right side = 30.00 m

OUTPUT OPTIONS

Stage no.	Stage description	Displacement	Active, Passive	Graph. output pressures
1	Change EI of wall to 1.0000E-03kN.m2/m	No	No	No
2	Apply surcharge no.1 at elev. 45.00	Yes	Yes	Yes
3	Apply surcharge no.2 at elev. 43.70	Yes	Yes	Yes
4	Change EI of wall to 190852kN.m2/m run	Yes	Yes	Yes
5	Excav. to elev. 43.00 on RIGHT side	Yes	Yes	Yes
6	Install strut no.1 at elev. 43.65	Yes	Yes	Yes
7	Excav. to elev. 41.60 on RIGHT side	Yes	Yes	Yes
8	Install strut no.4 at elev. 42.10	Yes	Yes	Yes
9	Excav. to elev. 39.77 on RIGHT side	Yes	Yes	Yes
10	Install strut no.2 at elev. 40.30	Yes	Yes	Yes
11	Remove strut no.4 at elev. 42.10	No	No	No
12	Install strut no.3 at elev. 44.50	Yes	Yes	Yes
13	Remove strut no.1 at elev. 43.65	Yes	Yes	Yes
14	Change soil type 2 to soil type 3	Yes	Yes	Yes
15	Change soil type 4 to soil type 5	Yes	Yes	Yes
16	Change EI of wall to 136323kN.m2/m run	Yes	Yes	Yes
17	Apply surcharge no.3 at elev. 43.70	Yes	Yes	Yes
*	Summary output	Yes	-	Yes

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 Barrie House, 29 St Edmunds Terrace, London | Date: 17-03-2023
 Pad B Foundations Assessment | Checked :

Units: kN,m

Stage No. 17 Apply surcharge no.3 at elevation 43.70

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method
 Factor of safety on soil strength

			FoS for toe elev. = 28.60	Toe elev. for FoS = 1.000			
Stage --- G.L. ---	Strut No.	Factor Act.	Moment of equilib.	Toe elev.	Wall Penetr	Direction of failure	
	Pass.	Elev.	Safety at elev.	-ation			

17 45.00 39.77 More than one strut. No FoS calc.

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 26.50m

Subgrade reaction model - Boussinesq Influence coefficients

Soil deformations are elastic until the active or passive limit is reached

Open Tension Crack analysis - No

Rigid boundaries: Left side 30.00 from wall
 Right side 30.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces are to be multiplied by a factor of 1.35 to obtain values for structural design. See summary for factored values.

*** Wall displacements reset to zero at stage 4

Node no.	Y coord	Nett pressure kN/m ²	Wall disp. m	Wall rotation rad.	Shear force kN/m	Bending moment kN.m/m	Strut forces kN/m	EI of wall kN.m ² /m
1	45.00	0.00	0.012	-1.79E-04	0.0	-0.0		136323
2	44.50	7.48	0.012	-1.80E-04	1.9	0.1	78.4	136323
		12.65	0.012	-1.80E-04	-76.6	0.1		
3	43.70	5.78	0.012	-1.40E-05	-69.2	-57.4		136323
4	43.65	6.03	0.012	7.34E-06	-68.9	-60.9		136323
5	43.50	16.32	0.012	7.91E-05	-67.2	-71.3		136323
		14.76	0.012	7.91E-05	-67.2	-71.3		
6	43.00	66.24	0.012	3.84E-04	-47.0	-97.4		136323
7	42.10	79.65	0.011	1.06E-03	18.7	-110.8		136323
8	41.60	72.18	0.010	1.42E-03	56.6	-92.1		136323
9	40.95	66.78	0.009	1.73E-03	101.8	-41.1		136323
10	40.30	68.31	0.008	1.73E-03	145.7	38.4	188.3	136323
		68.31	0.008	1.73E-03	-42.6	38.4		
11	39.77	73.36	0.007	1.59E-03	-5.0	26.1		136323
		49.09	0.007	1.59E-03	-5.0	26.1		
12	38.89	1.86	0.006	1.40E-03	17.5	33.5		136323
13	38.00	-20.34	0.005	1.15E-03	9.3	45.6		136323
14	37.00	-8.76	0.004	8.40E-04	-5.2	44.2		136323
15	36.00	-1.00	0.003	5.73E-04	-10.1	33.7		136323
16	35.00	2.66	0.003	3.88E-04	-9.3	21.9		136323
17	34.00	3.39	0.002	2.76E-04	-6.2	12.7		136323
18	33.00	2.57	0.002	2.16E-04	-3.3	6.8		136323
19	32.00	1.35	0.002	1.84E-04	-1.3	3.7		136323
20	31.00	0.37	0.002	1.67E-04	-0.4	2.0		136323
21	30.00	-0.09	0.002	1.57E-04	-0.3	0.9		136323
22	29.30	0.05	0.002	1.54E-04	-0.3	0.4		136323
23	28.60	0.81	0.001	1.53E-04	-0.0	-0.0		---

At elev. 44.50 Strut force = 78.4 kN/strut = 78.4 kN/m run

At elev. 40.30 Strut force = 188.3 kN/strut = 188.3 kN/m run

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(continued)

Stage No.17 Apply surcharge no.3 at elevation 43.70

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	Sheet No. Job No. 28408B Made by : ALP Date: 17-03-2023 Checked : -----
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 Units: kN,m

Summary of results

LIMIT STATE PARAMETERS

Limit State: Serviceability Limit State
 All loads and soil strengths are unfactored

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method

Factor of safety on soil strength

			FoS for toe elev. = 28.60	Toe elev. for FoS = 1.000			
Stage No.	--- G.L. --- Act.	Strut Pass.	Factor Elev.	Moment of equilib.	Toe elev.	Wall Penetr Safety at elev. Conditions not suitable for FoS calc.	Direction of failure
1	45.00	45.00	Cant.			No analysis at this stage	
2	45.00	45.00				No analysis at this stage	
3	45.00	45.00				No analysis at this stage	
4	45.00	45.00				No analysis at this stage	
5	45.00	43.00	Cant.	3.752	30.89	42.12	0.88 L to R
6	45.00	43.00				No analysis at this stage	
7	45.00	41.60	43.65	8.086	n/a	41.30	0.30 L to R
8	45.00	41.60				No analysis at this stage	

All remaining stages have more than one strut - FoS calculation n/a

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Summary of results

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 26.50m

Subgrade reaction model - Boussinesq Influence coefficients

Soil deformations are elastic until the active or passive limit is reached

Open Tension Crack analysis - No

Rigid boundaries: Left side 30.00 from wall

Right side 30.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Bending moment, shear force and displacement envelopes

Node no.	Y coord	Displacement	---- Bending moment ----				----- Shear force -----			
			Calculated		Factored		Calculated		Factored	
			max. m	min. m	max. kN.m/m	min. kN.m/m	max. kN/m	min. kN/m	max. kN/m	min. kN/m
1	45.00	0.013	0.000	0	-0	0	-0	0	0	0
2	44.50	0.012	0.000	0	0	0	0	2	-79	3
3	43.70	0.012	0.000	7	-59	10	-80	11	-72	15
4	43.65	0.012	0.000	8	-62	10	-84	11	-103	15
5	43.50	0.012	0.000	3	-73	4	-99	6	-102	8
6	43.00	0.012	0.000	13	-101	17	-136	27	-84	37
7	42.10	0.011	0.000	35	-121	47	-164	25	-76	34
8	41.60	0.010	0.000	47	-108	63	-146	67	-37	90
9	40.95	0.009	0.000	60	-78	81	-106	102	0	137
10	40.30	0.008	0.000	67	-60	91	-81	146	-43	197
11	39.77	0.008	0.000	69	-24	93	-33	86	-5	116
12	38.89	0.006	0.000	65	0	88	0	48	-9	65
13	38.00	0.005	0.000	68	0	92	0	18	-14	24
14	37.00	0.004	0.000	60	0	81	0	0	-14	0
15	36.00	0.003	0.000	48	0	65	0	0	-15	0
16	35.00	0.003	0.000	33	0	44	0	0	-14	0
17	34.00	0.002	0.000	19	0	26	0	0	-11	0
18	33.00	0.002	0.000	11	0	15	0	0	-7	0
19	32.00	0.002	0.000	6	0	8	0	0	-3	0
20	31.00	0.002	0.000	3	0	4	0	0	-2	0
21	30.00	0.002	0.000	1	0	2	0	0	-1	0
22	29.30	0.002	0.000	0	0	1	0	0	-1	0
23	28.60	0.001	0.000	0	-0	0	-0	0	-0	-0

Summary of results (continued)

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Maximum and minimum bending moment and shear force at each stage

Stage no.	Bending moment				Shear force			
	Calculated max. elev. kN.m/m	Factored min. elev. kN.m/m	Calculated max. elev. kN.m/m	Factored min. elev. kN/m	Calculated max. elev. kN/m	Factored min. elev. kN/m	Calculated max. elev. kN/m	Factored min. elev. kN/m
1	0	45.00	0	45.00	0	0	0	0
2	No calculation at this stage							
3	No calculation at this stage							
4	No calculation at this stage							
5	69	39.77	-0	45.00	93	-0	27	43.00
6	No calculation at this stage						-14	37.00
7	65	38.89	-51	42.10	88	-69	67	41.60
8	No calculation at this stage						-72	43.65
9	60	37.00	-78	40.95	81	-106	86	39.77
10	No calculation at this stage						-76	42.10
11	64	38.00	-99	41.60	87	-134	103	40.30
12	No calculation at this stage						-103	43.65
13	68	38.00	-121	42.10	92	-164	127	40.30
14	68	38.00	-121	42.10	92	-164	127	40.30
15	54	37.00	-111	42.10	73	-150	133	40.30
16	46	38.00	-105	42.10	62	-141	134	40.30
17	46	38.00	-111	42.10	62	-150	146	40.30

Maximum and minimum displacement at each stage

Stage no.	Displacement		Stage description
	maximum elev. m	minimum elev. m	
1	0.000	45.00	0.000
2	No calculation at this stage		Change EI of wall to 1.0000E-03kN.m ² /m run
3	No calculation at this stage		Apply surcharge no.1 at elev. 45.00
4	Wall displacements reset to zero		Apply surcharge no.2 at elev. 43.70
5	0.013	45.00	Change EI of wall to 190852kN.m ² /m run
6	0.013	45.00	Excav. to elev. 43.00 on RIGHT side
7	0.013	45.00	Install strut no.1 at elev. 43.65
8	No calculation at this stage		Excav. to elev. 41.60 on RIGHT side
9	0.012	45.00	Install strut no.4 at elev. 42.10
10	No calculation at this stage		Excav. to elev. 39.77 on RIGHT side
11	0.012	45.00	Install strut no.2 at elev. 40.30
12	0.012	45.00	Remove strut no.4 at elev. 42.10
13	0.012	45.00	Install strut no.3 at elev. 44.50
14	0.012	45.00	Remove strut no.1 at elev. 43.65
15	0.012	45.00	Change soil type 2 to soil type 3
16	0.012	43.70	Change soil type 4 to soil type 5
17	0.012	43.65	Change EI of wall to 136323kN.m ² /m run
			Apply surcharge no.3 at elev. 43.70

Summary of results (continued)

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Strut forces at each stage (horizontal components)

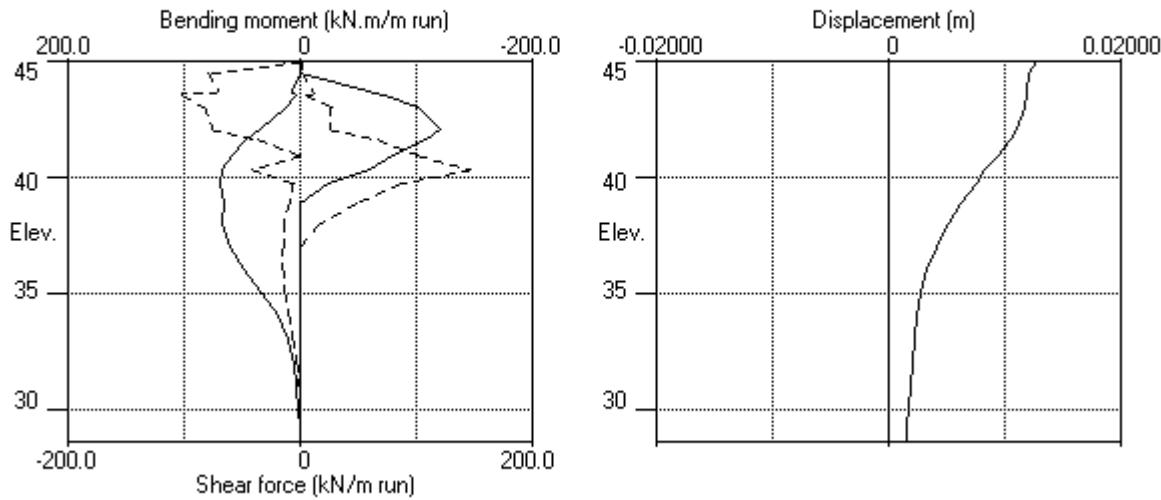
Stage no.	Strut no. 1			Strut no. 2			Strut no. 3			
	at elev. 43.65			at elev. 40.30			at elev. 44.50			
	--Calculated--	Factored	--Calculated--	Factored	--Calculated--	Factored	kN per m run	kN per strut	kN per m run	kN per strut
7	76	76	103	---	---	---	---	---	---	---
9	78	78	106	---	---	---	---	---	---	---
11	113	113	152	69	69	93	---	---	---	---
13	---	---	---	103	103	139	81	81	109	109
14	---	---	---	103	103	139	81	81	110	110
15	---	---	---	160	160	216	78	78	105	105
16	---	---	---	169	169	228	74	74	100	100
17	---	---	---	188	188	254	78	78	106	106
Stage no.	Strut no. 4			at elev. 42.10						
	--Calculated--	Factored								
9	kN per m run	kN per strut	kN per strut							
	97	97	131							

CARD GEOTECHNICS LIMITED
Program: WALLAP Version 6.06 Revision A51.B69.R55
Licensed from GEOSOLVE
Data filename/Run ID: WALLAP_Model_SLS_PADB_AGcheck
Barrie House, 29 St Edmunds Terrace, London
Pad B Foundations Assessment

| Sheet No.
| Job No. 28408B
| Made by : ALP
| Date: 17-03-2023
Checked :

Units: kN,m

Bending moment, shear force, displacement envelopes



Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Analysis Options

Analysis: Boussinesq
 Global Poisson's ratio: 0.50
 Maximum allowable ratio between values of E: 1.5
 Horizontal rigid boundary level: 15.00 [m OD]
 Stiffness for horizontal displacement calculations: Weighted average
 Using legacy heave correction factor: No
 Displacements at load centroids: Yes

Soil Profiles Soil Profile 1

Layer	Level at top	Number of intermediate displacement levels	Youngs Modulus [kN/m²]	Poissons ratio	Non-linear curve
1	46.100	5	15000.	0.20000	None
2	44.500	5	24000.	0.49500	None
3	43.500	5	24000.	0.49500	None

Soil Zones

zone	Name	X coordinates min [m]	X coordinates max [m]	Y coordinates min [m]	Y coordinates max [m]	Profile
1	1	-10.00000	40.00000	-15.00000	55.00000	Soil Profile 1

Non-linear Curve Coordinates - Non-linear Curve 1

Point Strain Factor [%]

Load Data

Load ref.	Name	Shape	Orientation of Plane	Centre of load (Global X Y Z)	Angle of rotation (level)	Width x from local x	Length y or Radius	Load position Polygon Coordinates	Load value		
									Number of tolerance rectangles	Normal (local z)	Tangential (local x) (local y)
1 Extension Excavation	Extension Excavation	Polygonal	Horizontal	N/A N/A 39.77000	N/A	N/A	N/A	N/A (0,18.4) (25.9,18.4) (25.9,16.2) (26.4,16.2) (26.4,9.44) (25.9,9.44) (25.9,6.82) (17.6,6.83) (17.6,4.2) (14.2,8.25) (14.2,8.5) (14.2,8.5) (9.97,8.25) (6.42,8.25) (6.42,6.83) (0,6.83)	10.000	6	[kN/m²] -123.40 [kN/m²] N/A [kN/m²] N/A
2 Barrie House Excavation	Barrie House Excavation	Polygonal	Horizontal	N/A	N/A 42.70000	N/A	N/A	N/A (6.45,5.13) (8.28,5.13) (8.28,4.89) (16.2,4.88) (16.2,-3.81) (13.5,-3.81) (13.5,-0.607) (13.6,-0.607) (13.6,1.29) (7.09,1.29) (7.09,0.22) (6.44,0.22) (6.44,5.13)	10.000	5	-46.080 N/A N/A
3 Porters Lodge Demolition	Porters Lodge Demolition	Polygonal	Horizontal	N/A	N/A 45.00000	N/A	N/A	N/A (-1.06,19.1) (-1.06,13.4) (-8.06,13.4) (-8.06,19.1)	10.000	1	-30.000 N/A N/A

Polygonal Loads' Rectangles

No. Centre of load X Y local x from global X [m] [m] [m] [Degrees] [m]

Load 1 : Extension Excavation

(Edge 2 optimal)

1	3.20850	12.59050	0.0	6.4170	11.519
2	-1.19550	13.30050	0.0	3.5570	10.099
3	12.07450	13.42350	0.0	4.2010	9.8530
4	15.88900	13.30050	0.0	3.4280	10.099
5	21.73300	12.58825	0.0	8.2600	11.524
6	26.15350	12.84050	0.0	0.56700	6.8010

Load 2 : Barrie House Excavation

(Edge 2 optimal)

1	7.35875	5.00900	-90.000	0.23800	1.8455
2	11.31698	3.08900	-90.000	3.5920	9.7620
3	6.76100	0.75650	-90.000	1.0730	0.65000
4	14.87619	0.34300	-90.000	1.9000	2.6404
5	14.84096	-2.20650	-90.000	3.1990	2.7079

Load 3 : Porters Lodge Demolition

(Edge 2 optimal)

1	-4.56400	16.25700	-90.000	5.7500	7.0000
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Displacement Data

Ref.	Type	Name	Direction of Extrusion	Line/Line for extrusion			No. of intrvls across extrusion/line	Extrusion Depth [m]	No. of intrvls along extrusion	Calculate extrusion	Show Detailed results	
				First point X [m]	Y [m]	Z [level] [m]						
1	Line	72	N/A 21.37000	18.35000	45.10000	21.37000	48.35000	45.10000	300	N/A	Yes Yes	
2	Line	Kingsland 16	N/A 0.00000	18.35000	45.10000	0.00000	48.35000	45.10000	300	N/A	Yes Yes	
3	Line	Pad A	N/A 8.19500	8.25100	43.70000	8.19500	-6.74900	43.70000	150	N/A	Yes Yes	
4	Line	Pad B	N/A 12.07500	8.49700	43.70000	12.07500	-6.50300	43.70000	150	N/A	Yes Yes	
5	Line	Pad C	N/A 15.88900	8.25100	43.70000	15.88900	-11.74900	43.70000	200	N/A	Yes Yes	
6	Grid	Grid 2	Global X	-30.00000	-30.00000	46.10000	N/A	70.00000	46.10000	90	90.00000	100 No N/A

Warnings

(1) One or more displacement grids or lines have numbers of intervals of at least 100. Large numbers of intervals will slow the analysis.

RESULTS FOR GRIDS

Analysis: Boussinesq
 Global Poisson's ratio: 0.50
 Horizontal rigid boundary level: 15.00 [m OD]

The maximum displacement difference between the Boussinesq method (-5.6167mm) and the Mindlin method (-4.3754mm) occurs at point X = 21.37000m, Y = 18.35000m, level = 45.10000m, and is 1.2413mm.

Name	Location X [m]	Y [m]	Z [Level] [mOD]	Displacement Z [mm]	Calc Level [mOD]	Vert Stress [kN/m²]	Sum Princ [-]	Vert Strain
Extension Excavation	13.16898	12.89018	39.77000	-11.158	37.548	-120.30	-269.30	-792.89E-6
Barrie House Excavation	12.18661	1.87954	42.70000	-4.2113	39.990	-27.923	-46.981	-429.66E-6
Porters Lodge Demolition	-4.56400	16.25700	45.00000	-4.2259	44.875	-29.999	-86.489	-0.0012467
72 Kingsland	21.37000	18.35000	45.10000	-5.6167	44.950	0.0	-0.0016809	0.0
	21.37000	18.45000	45.10000	-5.1736	44.950	0.0	-0.0016793	0.0
	21.37000	18.55000	45.10000	-4.3351	44.950	0.0	-0.0016759	0.0
	21.37000	18.65000	45.10000	-3.589	44.950	0.0	-0.0016729	0.0
	21.37000	18.85000	45.10000	-3.6194	44.950	0.0	-0.0016720	0.0
	21.37000	18.95000	45.10000	-3.3185	44.950	0.0	-0.0016700	0.0
	21.37000	19.05000	45.10000	-3.0557	44.950	0.0	-0.0016679	0.0
	21.37000	19.15000	45.10000	-2.8285	44.950	0.0	-0.0016658	0.0
	21.37000	19.25000	45.10000	-2.6333	44.950	0.0	-0.0016636	0.0
	21.37000	19.35000	45.10000	-2.4460	44.950	0.0	-0.0016613	0.0



**CARD GEOTECHNICS
LIMITED**

Barrie House, 29 St Edmunds Terrace, London

Basement Impact Assessment

Short Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location y [m]	z [Level] [mOD]	Displacement z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Stresses Sum Princ [kN/m ²]	Vert Strain [-]
21.37000	19.45000	45.10000	-2.3224	44.950	0.0	-0.0016589	0.0	
21.37000	19.55000	45.10000	-2.1986	44.950	0.0	-0.0016565	0.0	
21.37000	19.65000	45.10000	-2.0910	44.950	0.0	-0.0016540	0.0	
21.37000	19.75000	45.10000	-1.9966	44.950	0.0	-0.0016514	0.0	
21.37000	19.85000	45.10000	-1.9129	44.950	0.0	-0.0016488	0.0	
21.37000	19.95000	45.10000	-1.8377	44.950	0.0	-0.0016461	0.0	
21.37000	20.05000	45.10000	-1.7693	44.950	0.0	-0.0016433	0.0	
21.37000	20.15000	45.10000	-1.7064	44.950	0.0	-0.0016405	0.0	
21.37000	20.25000	45.10000	-1.6479	44.950	0.0	-0.0016376	0.0	
21.37000	20.35000	45.10000	-1.5929	44.950	0.0	-0.0016348	0.0	
21.37000	20.45000	45.10000	-1.5408	44.950	0.0	-0.0016316	0.0	
21.37000	20.55000	45.10000	-1.4911	44.950	0.0	-0.0016285	0.0	
21.37000	20.65000	45.10000	-1.4433	44.950	0.0	-0.0016254	0.0	
21.37000	20.75000	45.10000	-1.3972	44.950	0.0	-0.0016222	0.0	
21.37000	20.85000	45.10000	-1.3526	44.950	0.0	-0.0016189	0.0	
21.37000	20.95000	45.10000	-1.3092	44.950	0.0	-0.0016156	0.0	
21.37000	21.05000	45.10000	-1.2669	44.950	0.0	-0.0016122	0.0	
21.37000	21.15000	45.10000	-1.2257	44.950	0.0	-0.0016087	0.0	
21.37000	21.25000	45.10000	-1.1855	44.950	0.0	-0.0016052	0.0	
21.37000	21.35000	45.10000	-1.1462	44.950	0.0	-0.0016017	0.0	
21.37000	21.45000	45.10000	-1.1076	44.950	0.0	-0.0015980	0.0	
21.37000	21.55000	45.10000	-1.0703	44.950	0.0	-0.0015943	0.0	
21.37000	21.65000	45.10000	-1.0336	44.950	0.0	-0.0015906	0.0	
21.37000	21.75000	45.10000	-0.9976	44.950	0.0	-0.0015868	0.0	
21.37000	21.85000	45.10000	-0.9626	44.950	0.0	-0.0015829	0.0	
21.37000	21.95000	45.10000	-0.9283	44.950	0.0	-0.0015790	0.0	
21.37000	22.05000	45.10000	-0.8948	44.950	0.0	-0.0015751	0.0	
21.37000	22.15000	45.10000	-0.8621	44.950	0.0	-0.0015711	0.0	
21.37000	22.25000	45.10000	-0.8302	44.950	0.0	-0.0015670	0.0	
21.37000	22.35000	45.10000	-0.7990	44.950	0.0	-0.0015629	0.0	
21.37000	22.45000	45.10000	-0.7686	44.950	0.0	-0.0015589	0.0	
21.37000	22.55000	45.10000	-0.7391	44.950	0.0	-0.0015546	0.0	
21.37000	22.65000	45.10000	-0.7109	44.950	0.0	-0.0015503	0.0	
21.37000	22.75000	45.10000	-0.6819	44.950	0.0	-0.0015460	0.0	
21.37000	22.85000	45.10000	-0.6542	44.950	0.0	-0.0015416	0.0	
21.37000	22.95000	45.10000	-0.6276	44.950	0.0	-0.0015373	0.0	
21.37000	23.05000	45.10000	-0.6015	44.950	0.0	-0.0015328	0.0	
21.37000	23.15000	45.10000	-0.5716	44.950	0.0	-0.0015283	0.0	
21.37000	23.25000	45.10000	-0.5514	44.950	0.0	-0.0015233	0.0	
21.37000	23.35000	45.10000	-0.5273	44.950	0.0	-0.0015192	0.0	
21.37000	23.45000	45.10000	-0.5038	44.950	0.0	-0.0015146	0.0	
21.37000	23.55000	45.10000	-0.4810	44.950	0.0	-0.0015108	0.0	
21.37000	23.65000	45.10000	-0.4592	44.950	0.0	-0.0015069	0.0	
21.37000	23.75000	45.10000	-0.4371	44.950	0.0	-0.0015006	0.0	
21.37000	23.85000	45.10000	-0.4164	44.950	0.0	-0.0014958	0.0	
21.37000	23.95000	45.10000	-0.3956	44.950	0.0	-0.0014910	0.0	
21.37000	24.05000	45.10000	-0.3757	44.950	0.0	-0.0014862	0.0	
21.37000	24.15000	45.10000	-0.3563	44.950	0.0	-0.0014813	0.0	
21.37000	24.25000	45.10000	-0.3374	44.950	0.0	-0.0014764	0.0	
21.37000	24.35000	45.10000	-0.3191	44.950	0.0	-0.0014714	0.0	
21.37000	24.45000	45.10000	-0.3012	44.950	0.0	-0.0014664	0.0	
21.37000	24.55000	45.10000	-0.2838	44.950	0.0	-0.0014614	0.0	
21.37000	24.65000	45.10000	-0.2669	44.950	0.0	-0.0014564	0.0	
21.37000	24.75000	45.10000	-0.2505	44.950	0.0	-0.0014492	0.0	
21.37000	24.85000	45.10000	-0.2350	44.950	0.0	-0.0014462	0.0	
21.37000	24.95000	45.10000	-0.2193	44.950	0.0	-0.0014411	0.0	
21.37000	25.05000	45.10000	-0.2037	44.950	0.0	-0.0014359	0.0	
21.37000	25.15000	45.10000	-0.1890	44.950	0.0	-0.0014307	0.0	
21.37000	25.25000	45.10000	-0.1747	44.950	0.0	-0.0014255	0.0	
21.37000	25.35000	45.10000	-0.1607	44.950	0.0	-0.0014203	0.0	
21.37000	25.45000	45.10000	-0.1472	44.950	0.0	-0.0014150	0.0	
21.37000	25.55000	45.10000	-0.1340	44.950	0.0	-0.0014097	0.0	
21.37000	25.65000	45.10000	-0.1211	44.950	0.0	-0.0014044	0.0	
21.37000	25.75000	45.10000	-0.1086	44.950	0.0	-0.0013994	0.0	
21.37000	25.85000	45.10000	-0.0965	44.950	0.0	-0.0013937	0.0	
21.37000	25.95000	45.10000	-0.0847	44.950	0.0	-0.0013870	0.0	
21.37000	26.05000	45.10000	-0.0732	44.950	0.0	-0.0013829	0.0	
21.37000	26.15000	45.10000	-0.0620	44.950	0.0	-0.0013775	0.0	
21.37000	26.25000	45.10000	-0.0511	44.950	0.0	-0.0013721	0.0	
21.37000	26.35000	45.10000	-0.0405	44.950	0.0	-0.0013666	0.0	
21.37000	26.45000	45.10000	-0.0302	44.950	0.0	-0.0013611	0.0	
21.37000	26.55000	45.10000	-0.0202	44.950	0.0	-0.0013556	0.0	
21.37000	26.65000	45.10000	-0.0104	44.950	0.0	-0.0013501	0.0	
21.37000	26.75000	45.10000	-0.0001	44.950	0.0	-0.0013446	0.0	
21.37000	26.85000	45.10000	0.0082	44.950	0.0	-0.0013390	0.0	
21.37000	26.95000	45.10000	0.0178	44.950	0.0	-0.0013335	0.0	
21.37000	27.05000	45.10000	0.0260	44.950	0.0	-0.0013280	0.0	
21.37000	27.15000	45.10000	0.0343	44.950	0.0	-0.0013223	0.0	
21.37000	27.25000	45.10000	0.0426	44.950	0.0	-0.0013168	0.0	
21.37000	27.35000	45.10000	0.0506	44.950	0.0	-0.0013112	0.0	
21.37000	27.45000	45.10000	0.0584	44.950	0.0	-0.0013055	0.0	
21.37000	27.55000	45.10000	0.0660	44.950	0.0	-0.0012999	0.0	
21.37000	27.65000	45.10000	0.0734	44.950	0.0	-0.0012943	0.0	
21.37000	27.75000	45.10000	0.0805	44.950	0.0	-0.0012880	0.0	
21.37000	27.85000	45.10000	0.0876	44.950	0.0	-0.0012830	0.0	
21.37000	27.95000	45.10000	0.0943	44.950	0.0	-0.0012773	0.0	
21.37000	28.05000	45.10000	0.1009	44.950	0.0	-0.0012717	0.0	
21.37000	28.15000	45.10000	0.1072	44.950	0.0	-0.0012660	0.0	
21.37000	28.25000	45.10000	0.1135	44.950	0.0	-0.0012603	0.0	
21.37000	28.35000	45.10000	0.1195	44.950	0.0	-0.0012547	0.0	
21.37000	28.45000	45.10000	0.1254	44.950	0.0	-0.0012490	0.0	
21.37000	28.55000	45.10000	0.1317	44.950	0.0	-0.0012433	0.0	
21.37000	28.65000	45.10000	0.1367	44.950	0.0	-0.0012376	0.0	
21.37000	28.75000	45.10000	0.1420	44.950	0.0	-0.0012319	0.0	
21.37000	28.85000	45.10000	0.1473	44.950	0.0	-0.0012262	0.0	
21.37000	28.95000	45.10000	0.1524	44.950	0.0	-0.0012205	0.0	
21.37000	29.05000	45.10000	0.1573	44.950	0.0	-0.0012148	0.0	
21.37000	29.15000	45.10000	0.1621	44.950	0.0	-0.0012090	0.0	
21.37000	29.25000	45.10000	0.1667	44.950	0.0	-0.0012035	0.0	
21.37000	29.35000	45.10000	0.1726	44.950	0.0	-0.0011971	0.0	
21.37000	29.45000	45.10000	0.1784	44.950	0.0	-0.0011916	0.0	
21.37000	29.55000	45.10000	0.1839	44.950	0.0	-0.0011807	0.0	
21.37000	29.							

Name	Location	Displacement	Stresses					
	x [m]	y [m]	z [Level] [mOD]	z [mm]	Calc Level [mOD]	Vert Stress [kN/m²]	Sum Princ [kN/m²]	Vert Strain [-]
21.37000	33.55000	45.10000	0.27102	44.950	0.0	-965.90E-6	0.0	
21.37000	33.65000	45.10000	0.27189	44.950	0.0	-960.66E-6	0.0	
21.37000	33.75000	45.10000	0.27271	44.950	0.0	-955.45E-6	0.0	
21.37000	33.85000	45.10000	0.27348	44.950	0.0	-950.25E-6	0.0	
21.37000	33.95000	45.10000	0.27421	44.950	0.0	-945.07E-6	0.0	
21.37000	34.05000	45.10000	0.27489	44.950	0.0	-939.90E-6	0.0	
21.37000	34.15000	45.10000	0.27553	44.950	0.0	-934.76E-6	0.0	
21.37000	34.25000	45.10000	0.27613	44.950	0.0	-929.63E-6	0.0	
21.37000	34.35000	45.10000	0.27668	44.950	0.0	-924.52E-6	0.0	
21.37000	34.45000	45.10000	0.27720	44.950	0.0	-919.41E-6	0.0	
21.37000	34.55000	45.10000	0.27767	44.950	0.0	-914.36E-6	0.0	
21.37000	34.65000	45.10000	0.27811	44.950	0.0	-909.31E-6	0.0	
21.37000	34.75000	45.10000	0.27851	44.950	0.0	-904.28E-6	0.0	
21.37000	34.85000	45.10000	0.27887	44.950	0.0	-899.26E-6	0.0	
21.37000	34.95000	45.10000	0.27920	44.950	0.0	-894.27E-6	0.0	
21.37000	35.05000	45.10000	0.27949	44.950	0.0	-889.30E-6	0.0	
21.37000	35.15000	45.10000	0.27975	44.950	0.0	-884.34E-6	0.0	
21.37000	35.25000	45.10000	0.27997	44.950	0.0	-879.41E-6	0.0	
21.37000	35.35000	45.10000	0.28016	44.950	0.0	-874.50E-6	0.0	
21.37000	35.45000	45.10000	0.28032	44.950	0.0	-869.60E-6	0.0	
21.37000	35.55000	45.10000	0.28045	44.950	0.0	-864.70E-6	0.0	
21.37000	35.65000	45.10000	0.28055	44.950	0.0	-859.88E-6	0.0	
21.37000	35.75000	45.10000	0.28062	44.950	0.0	-855.05E-6	0.0	
21.37000	35.85000	45.10000	0.28066	44.950	0.0	-850.24E-6	0.0	
21.37000	35.95000	45.10000	0.28067	44.950	0.0	-845.45E-6	0.0	
21.37000	36.05000	45.10000	0.28066	44.950	0.0	-840.68E-6	0.0	
21.37000	36.15000	45.10000	0.28062	44.950	0.0	-835.93E-6	0.0	
21.37000	36.25000	45.10000	0.28055	44.950	0.0	-831.20E-6	0.0	
21.37000	36.35000	45.10000	0.28046	44.950	0.0	-826.50E-6	0.0	
21.37000	36.45000	45.10000	0.28034	44.950	0.0	-821.81E-6	0.0	
21.37000	36.55000	45.10000	0.28020	44.950	0.0	-817.15E-6	0.0	
21.37000	36.65000	45.10000	0.28004	44.950	0.0	-812.50E-6	0.0	
21.37000	36.75000	45.10000	0.27985	44.950	0.0	-807.89E-6	0.0	
21.37000	36.85000	45.10000	0.27964	44.950	0.0	-803.29E-6	0.0	
21.37000	36.95000	45.10000	0.27941	44.950	0.0	-798.71E-6	0.0	
21.37000	37.05000	45.10000	0.27916	44.950	0.0	-794.15E-6	0.0	
21.37000	37.15000	45.10000	0.27889	44.950	0.0	-789.62E-6	0.0	
21.37000	37.25000	45.10000	0.27859	44.950	0.0	-785.11E-6	0.0	
21.37000	37.35000	45.10000	0.27828	44.950	0.0	-780.62E-6	0.0	
21.37000	37.45000	45.10000	0.27795	44.950	0.0	-776.15E-6	0.0	
21.37000	37.55000	45.10000	0.27760	44.950	0.0	-771.70E-6	0.0	
21.37000	37.65000	45.10000	0.27723	44.950	0.0	-767.27E-6	0.0	
21.37000	37.75000	45.10000	0.27685	44.950	0.0	-763.84E-6	0.0	
21.37000	37.85000	45.10000	0.27649	44.950	0.0	-759.49E-6	0.0	
21.37000	37.95000	45.10000	0.27610	44.950	0.0	-754.13E-6	0.0	
21.37000	38.05000	45.10000	0.27560	44.950	0.0	-749.79E-6	0.0	
21.37000	38.15000	45.10000	0.27515	44.950	0.0	-745.47E-6	0.0	
21.37000	38.25000	45.10000	0.27468	44.950	0.0	-741.18E-6	0.0	
21.37000	38.35000	45.10000	0.27420	44.950	0.0	-736.90E-6	0.0	
21.37000	38.45000	45.10000	0.27371	44.950	0.0	-732.65E-6	0.0	
21.37000	38.55000	45.10000	0.27320	44.950	0.0	-728.42E-6	0.0	
21.37000	38.65000	45.10000	0.27268	44.950	0.0	-724.22E-6	0.0	
21.37000	38.75000	45.10000	0.27215	44.950	0.0	-720.03E-6	0.0	
21.37000	38.85000	45.10000	0.27166	44.950	0.0	-715.85E-6	0.0	
21.37000	38.95000	45.10000	0.27104	44.950	0.0	-711.73E-6	0.0	
21.37000	39.05000	45.10000	0.27047	44.950	0.0	-707.61E-6	0.0	
21.37000	39.15000	45.10000	0.26989	44.950	0.0	-703.51E-6	0.0	
21.37000	39.25000	45.10000	0.26929	44.950	0.0	-699.43E-6	0.0	
21.37000	39.35000	45.10000	0.26869	44.950	0.0	-695.38E-6	0.0	
21.37000	39.45000	45.10000	0.26807	44.950	0.0	-691.35E-6	0.0	
21.37000	39.55000	45.10000	0.26744	44.950	0.0	-687.33E-6	0.0	
21.37000	39.65000	45.10000	0.26681	44.950	0.0	-683.35E-6	0.0	
21.37000	39.75000	45.10000	0.26616	44.950	0.0	-679.38E-6	0.0	
21.37000	39.85000	45.10000	0.26551	44.950	0.0	-675.43E-6	0.0	
21.37000	39.95000	45.10000	0.26484	44.950	0.0	-671.51E-6	0.0	
21.37000	40.05000	45.10000	0.26417	44.950	0.0	-667.60E-6	0.0	
21.37000	40.15000	45.10000	0.26349	44.950	0.0	-663.72E-6	0.0	
21.37000	40.25000	45.10000	0.26280	44.950	0.0	-659.87E-6	0.0	
21.37000	40.35000	45.10000	0.26210	44.950	0.0	-656.03E-6	0.0	
21.37000	40.45000	45.10000	0.26140	44.950	0.0	-652.21E-6	0.0	
21.37000	40.55000	45.10000	0.26068	44.950	0.0	-648.42E-6	0.0	
21.37000	40.65000	45.10000	0.25996	44.950	0.0	-644.64E-6	0.0	
21.37000	40.75000	45.10000	0.25924	44.950	0.0	-640.89E-6	0.0	
21.37000	40.85000	45.10000	0.25850	44.950	0.0	-637.16E-6	0.0	
21.37000	40.95000	45.10000	0.25776	44.950	0.0	-633.45E-6	0.0	
21.37000	41.05000	45.10000	0.25702	44.950	0.0	-629.76E-6	0.0	
21.37000	41.15000	45.10000	0.25627	44.950	0.0	-626.09E-6	0.0	
21.37000	41.25000	45.10000	0.25551	44.950	0.0	-622.43E-6	0.0	
21.37000	41.35000	45.10000	0.25475	44.950	0.0	-618.82E-6	0.0	
21.37000	41.45000	45.10000	0.25398	44.950	0.0	-615.21E-6	0.0	
21.37000	41.55000	45.10000	0.25320	44.950	0.0	-611.63E-6	0.0	
21.37000	41.65000	45.10000	0.25243	44.950	0.0	-608.06E-6	0.0	
21.37000	41.75000	45.10000	0.25164	44.950	0.0	-604.52E-6	0.0	
21.37000	41.85000	45.10000	0.25086	44.950	0.0	-601.00E-6	0.0	
21.37000	41.95000	45.10000	0.25006	44.950	0.0	-597.49E-6	0.0	
21.37000	42.05000	45.10000	0.24927	44.950	0.0	-594.01E-6	0.0	
21.37000	42.15000	45.10000	0.24847	44.950	0.0	-594.55E-6	0.0	
21.37000	42.25000	45.10000	0.24767	44.950	0.0	-587.11E-6	0.0	
21.37000	42.35000	45.10000	0.24686	44.950	0.0	-583.69E-6	0.0	
21.37000	42.45000	45.10000	0.24605	44.950	0.0	-580.25E-6	0.0	
21.37000	42.55000	45.10000	0.24524	44.950	0.0	-576.91E-6	0.0	
21.37000	42.65000	45.10000	0.24442	44.950	0.0	-573.55E-6	0.0	
21.37000	42.75000	45.10000	0.24360	44.950	0.0	-570.21E-6	0.0	
21.37000	42.85000	45.10000	0.24278	44.950	0.0	-566.89E-6	0.0	
21.37000	42.95000	45.10000	0.24195	44.950	0.0	-563.59E-6	0.0	
21.37000	43.05000	45.10000	0.24113	44.950	0.0	-560.31E-6	0.0	
21.37000	43.15000	45.10000	0.24030	44.950	0.0	-557.05E-6	0.0	
21.37000	43.25000	45.10000	0.23946	44.950	0.0	-553.81E-6	0.0	
21.37000	43.35000	45.10000	0.23863	44.950	0.0	-550.58E-6	0.0	
21.37000	43.45000	45.10000	0.23780	44.950	0.0	-547.38E-6	0.0	
21.37000	43.55000	45.10000	0.23696	44.950	0.0	-544.16E-6	0.0	
21.37000	43.65000	45.10000	0.23612	44.950	0.0	-541.04E-6	0.0	
21.37000	43.75000	45.10000	0.23529	44.950	0.0	-537.93E-6	0.0	
21.37000	43.85000	45						



**CARD GEOTECHNICS
LIMITED**

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Short Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [m]	Y [m]	Z[Level] [mOD]	Displacement z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Stresses Sum Princ [kN/m ²]	Vert Strain [-]	
	21.37000	47.65000	45.10000	0.20242	44.950	0.0	-429.29E-6	0.0	
	21.37000	47.75000	45.10000	0.20160	44.950	0.0	-426.84E-6	0.0	
	21.37000	47.85000	45.10000	0.20078	44.950	0.0	-424.41E-6	0.0	
	21.37000	47.95000	45.10000	0.19996	44.950	0.0	-421.99E-6	0.0	
	21.37000	48.05000	45.10000	0.19914	44.950	0.0	-419.59E-6	0.0	
	21.37000	48.15000	45.10000	0.19832	44.950	0.0	-417.20E-6	0.0	
	21.37000	48.25000	45.10000	0.19751	44.950	0.0	-414.83E-6	0.0	
	21.37000	48.35000	45.10000	0.19670	44.950	0.0	-412.47E-6	0.0	
16 Kingsland	0.00000	18.35000	45.10000	-3.3751	44.950	-540.84E-6	-0.73225	9.7201E-6	
	0.00000	18.45000	45.10000	-3.3259	44.950	-522.11E-6	-0.73225	9.4468E-6	
	0.00000	18.55000	45.10000	-3.31024	44.950	-501.93E-6	-0.68844	9.1336E-6	
	0.00000	18.65000	45.10000	-2.8798	44.950	-478.08E-6	-0.66408	9.8162E-6	
	0.00000	18.75000	45.10000	-2.6726	44.950	-451.23E-6	-0.63819	8.4731E-6	
	0.00000	18.85000	45.10000	-2.4832	44.950	-421.54E-6	-0.61095	8.1123E-6	
	0.00000	18.95000	45.10000	-2.3128	44.950	-389.46E-6	-0.58261	7.7369E-6	
	0.00000	19.05000	45.10000	-2.1612	44.950	-355.67E-6	-0.55349	7.3514E-6	
	0.00000	19.15000	45.10000	-2.0273	44.950	-321.05E-6	-0.52398	6.9608E-6	
	0.00000	19.25000	45.10000	-1.9092	44.950	-286.61E-6	-0.49450	6.5704E-6	
	0.00000	19.35000	45.10000	-1.8051	44.950	-253.32E-6	-0.46545	6.1857E-6	
	0.00000	19.45000	45.10000	-1.7130	44.950	-222.01E-6	-0.43719	5.8115E-6	
	0.00000	19.55000	45.10000	-1.6210	44.950	-193.16E-6	-0.41084	5.4468E-6	
	0.00000	19.65000	45.10000	-1.5573	44.950	-167.44E-6	-0.38419	5.1092E-6	
	0.00000	19.75000	45.10000	-1.4906	44.950	-144.62E-6	-0.35982	4.7860E-6	
	0.00000	19.85000	45.10000	-1.4296	44.950	-124.73E-6	-0.33698	4.4831E-6	
	0.00000	19.95000	45.10000	-1.3732	44.950	-107.56E-6	-0.31569	4.2006E-6	
	0.00000	20.05000	45.10000	-1.3207	44.950	-92.84E-6	-0.29593	3.9383E-6	
	0.00000	20.15000	45.10000	-1.2714	44.950	-80.29E-6	-0.27762	3.6952E-6	
	0.00000	20.25000	45.10000	-1.2247	44.950	-69.604E-6	-0.26070	3.4704E-6	
	0.00000	20.35000	45.10000	-1.1803	44.950	-50.513E-6	-0.24507	3.2627E-6	
	0.00000	20.45000	45.10000	-1.1379	44.950	-52.775E-6	-0.23063	3.0709E-6	
	0.00000	20.55000	45.10000	-1.0971	44.950	-46.181E-6	-0.21730	2.8936E-6	
	0.00000	20.65000	45.10000	-1.0578	44.950	-40.506E-6	-0.20598	2.7238E-6	
	0.00000	20.75000	45.10000	-1.0198	44.950	-35.724E-6	-0.19358	2.5975E-6	
	0.00000	20.85000	45.10000	-0.98307	44.950	-31.582E-6	-0.18303	2.4378E-6	
	0.00000	20.95000	45.10000	-0.94742	44.950	-28.012E-6	-0.17324	2.3077E-6	
	0.00000	21.05000	45.10000	-0.91281	44.950	-24.927E-6	-0.16417	2.1869E-6	
	0.00000	21.15000	45.10000	-0.87918	44.950	-22.251E-6	-0.15573	2.0744E-6	
	0.00000	21.25000	45.10000	-0.84648	44.950	-19.922E-6	-0.14788	1.9701E-6	
	0.00000	21.35000	45.10000	-0.81468	44.950	-17.889E-6	-0.14057	1.8728E-6	
	0.00000	21.45000	45.10000	-0.78375	44.950	-16.108E-6	-0.13374	1.7820E-6	
	0.00000	21.55000	45.10000	-0.75365	44.950	-14.543E-6	-0.12737	1.6971E-6	
	0.00000	21.65000	45.10000	-0.72436	44.950	-13.163E-6	-0.12143	1.6177E-6	
	0.00000	21.75000	45.10000	-0.69586	44.950	-12.003E-6	-0.11593	1.5405E-6	
	0.00000	21.85000	45.10000	-0.66912	44.950	-10.861E-6	-0.11059	1.4737E-6	
	0.00000	21.95000	45.10000	-0.64115	44.950	-9.909E-6	-0.10568	1.4033E-6	
	0.00000	22.05000	45.10000	-0.61489	44.950	-9.0419E-6	-0.10106	1.3467E-6	
	0.00000	22.15000	45.10000	-0.58936	44.950	-8.2753E-6	-0.096714	1.2889E-6	
	0.00000	22.25000	45.10000	-0.56451	44.950	-7.5883E-6	-0.092621	1.2343E-6	
	0.00000	22.35000	45.10000	-0.54035	44.950	-6.9711E-6	-0.088761	1.1829E-6	
	0.00000	22.45000	45.10000	-0.51684	44.950	-6.4153E-6	-0.085118	1.1344E-6	
	0.00000	22.55000	45.10000	-0.49398	44.950	-5.9139E-6	-0.081677	1.0885E-6	
	0.00000	22.65000	45.10000	-0.47175	44.950	-5.4603E-6	-0.078422	1.0452E-6	
	0.00000	22.75000	45.10000	-0.45013	44.950	-5.0494E-6	-0.075342	1.0042E-6	
	0.00000	22.85000	45.10000	-0.42911	44.950	-4.6762E-6	-0.072424	0.0	
	0.00000	22.95000	45.10000	-0.40866	44.950	-4.3368E-6	-0.06665	0.0	
	0.00000	23.05000	45.10000	-0.38878	44.950	-4.0158E-6	-0.06712	0.0	
	0.00000	23.15000	45.10000	-0.36945	44.950	-3.7451E-6	-0.064539	0.0	
	0.00000	23.25000	45.10000	-0.35065	44.950	-3.4868E-6	-0.062169	0.0	
	0.00000	23.35000	45.10000	-0.33237	44.950	-3.2503E-6	-0.059916	0.0	
	0.00000	23.45000	45.10000	-0.31459	44.950	-3.0334E-6	-0.057771	0.0	
	0.00000	23.55000	45.10000	-0.29730	44.950	-2.8340E-6	-0.055729	0.0	
	0.00000	23.65000	45.10000	-0.28049	44.950	-2.6507E-6	-0.053782	0.0	
	0.00000	23.75000	45.10000	-0.26415	44.950	-2.4817E-6	-0.051926	0.0	
	0.00000	23.85000	45.10000	-0.24825	44.950	-2.3258E-6	-0.050154	0.0	
	0.00000	23.95000	45.10000	-0.23279	44.950	-2.1819E-6	-0.049463	0.0	
	0.00000	24.05000	45.10000	-0.2175	44.950	-2.0417E-6	-0.048761	0.0	
	0.00000	24.15000	45.10000	-0.20313	44.950	-1.9054E-6	-0.045303	0.0	
	0.00000	24.25000	45.10000	-0.18890	44.950	-1.8111E-6	-0.043826	0.0	
	0.00000	24.35000	45.10000	-0.17507	44.950	-1.7050E-6	-0.042412	0.0	
	0.00000	24.45000	45.10000	-0.16161	44.950	-1.6064E-6	-0.041059	0.0	
	0.00000	24.55000	45.10000	-0.14852	44.950	-1.5148E-6	-0.039763	0.0	
	0.00000	24.65000	45.10000	-0.13579	44.950	-1.4294E-6	-0.038520	0.0	
	0.00000	24.75000	45.10000	-0.12340	44.950	-1.3499E-6	-0.037329	0.0	
	0.00000	24.85000	45.10000	-0.11135	44.950	-1.2757E-6	-0.036186	0.0	
	0.00000	24.95000	45.10000	-0.099627	44.950	-1.2064E-6	-0.035089	0.0	
	0.00000	25.05000	45.10000	-0.088222	44.950	-1.1417E-6	-0.034030	0.0	
	0.00000	25.15000	45.10000	-0.076727	44.950	-1.0811E-6	-0.033053	0.0	
	0.00000	25.25000	45.10000	-0.06632	44.950	-1.0244E-6	-0.032053	0.0	
	0.00000	25.35000	45.10000	-0.055829	44.950	-9.6050	0.0	-0.031118	0.0
	0.00000	25.45000	45.10000	-0.045611	44.950	0.0	-0.030220	0.0	
	0.00000	25.55000	45.10000	-0.035669	44.950	0.0	-0.029355	0.0	
	0.00000	25.65000	45.10000	-0.02596	44.950	0.0	-0.028523	0.0	
	0.00000	25.75000	45.10000	-0.016584	44.950	0.0	-0.027722	0.0	
	0.00000	25.85000	45.10000	-0.007426	44.950	0.0	-0.026207	0.0	
	0.00000	25.95000	45.10000	-0.0014826	44.950	0.0	-0.025490	0.0	
	0.00000	26.05000	45.10000	0.010151	44.950	0.0	-0.024799	0.0	
	0.00000	26.15000	45.10000	0.018585	44.950	0.0	-0.024133	0.0	
	0.00000	26.25000	45.10000	0.026291	44.950	0.0	-0.023441	0.0	
	0.00000	26.35000	45.10000	0.034775	44.950	0.0	-0.022869	0.0	
	0.00000	26.45000	45.10000	0.042542	44.950	0.0	-0.022270	0.0	
	0.00000	26.55000	45.10000	0.050099	44.950	0.0	-0.021691	0.0	
	0.00000	26.65000	45.10000	0.057450	44.950	0.0	-0.021133	0.0	
	0.00000	26.75000	45.10000	0.064601	44.950	0.0	-0.020593	0.0	
	0.00000	26.85000	45.10000	0.071558	44.950	0.0	-0.020071	0.0	
	0.00000	26.95000	45.10000	0.078324	44.950	0.0	-0.019566	0.0	
	0.00000	27.05000	45.10000	0.084906	44.950	0.0	-0.019078	0.0	
	0.00000	27.15000	45.10000	0.091308	44.950	0.0	-0.018601	0.0	
	0.00								

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location y [m]	Z[Level] [mOD]	Displacement		Stresses			Vert Strain [-]
				Z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]		
0.00000	31.65000	45.10000	0.24835	44.950	0.0	-0.0072541	0.0		
0.00000	31.75000	45.10000	0.24983	44.950	0.0	-0.0071215	0.0		
0.00000	31.85000	45.10000	0.25125	44.950	0.0	-0.0069921	0.0		
0.00000	31.95000	45.10000	0.25261	44.950	0.0	-0.0068659	0.0		
0.00000	32.05000	45.10000	0.25392	44.950	0.0	-0.0067426	0.0		
0.00000	32.15000	45.10000	0.25517	44.950	0.0	-0.0066222	0.0		
0.00000	32.25000	45.10000	0.25637	44.950	0.0	-0.0065048	0.0		
0.00000	32.35000	45.10000	0.25752	44.950	0.0	-0.0063898	0.0		
0.00000	32.45000	45.10000	0.25861	44.950	0.0	-0.0062776	0.0		
0.00000	32.55000	45.10000	0.25966	44.950	0.0	-0.0061656	0.0		
0.00000	32.65000	45.10000	0.26065	44.950	0.0	-0.0060610	0.0		
0.00000	32.75000	45.10000	0.26160	44.950	0.0	-0.0059563	0.0		
0.00000	32.85000	45.10000	0.26250	44.950	0.0	-0.0058541	0.0		
0.00000	32.95000	45.10000	0.26336	44.950	0.0	-0.0057541	0.0		
0.00000	33.05000	45.10000	0.26417	44.950	0.0	-0.0056564	0.0		
0.00000	33.15000	45.10000	0.26494	44.950	0.0	-0.0055609	0.0		
0.00000	33.25000	45.10000	0.26566	44.950	0.0	-0.0054675	0.0		
0.00000	33.35000	45.10000	0.26635	44.950	0.0	-0.0053761	0.0		
0.00000	33.45000	45.10000	0.26699	44.950	0.0	-0.0052861	0.0		
0.00000	33.55000	45.10000	0.26760	44.950	0.0	-0.0051951	0.0		
0.00000	33.65000	45.10000	0.26816	44.950	0.0	-0.0051139	0.0		
0.00000	33.75000	45.10000	0.26869	44.950	0.0	-0.0050303	0.0		
0.00000	33.85000	45.10000	0.26919	44.950	0.0	-0.0049484	0.0		
0.00000	33.95000	45.10000	0.26963	44.950	0.0	-0.0048683	0.0		
0.00000	34.05000	45.10000	0.27005	44.950	0.0	-0.0047899	0.0		
0.00000	34.15000	45.10000	0.27043	44.950	0.0	-0.0047132	0.0		
0.00000	34.25000	45.10000	0.27078	44.950	0.0	-0.0046381	0.0		
0.00000	34.35000	45.10000	0.27110	44.950	0.0	-0.0045645	0.0		
0.00000	34.45000	45.10000	0.27139	44.950	0.0	-0.0044925	0.0		
0.00000	34.55000	45.10000	0.27164	44.950	0.0	-0.0044220	0.0		
0.00000	34.65000	45.10000	0.27186	44.950	0.0	-0.0043533	0.0		
0.00000	34.75000	45.10000	0.27205	44.950	0.0	-0.0042839	0.0		
0.00000	34.85000	45.10000	0.27222	44.950	0.0	-0.0042191	0.0		
0.00000	34.95000	45.10000	0.27236	44.950	0.0	-0.0041541	0.0		
0.00000	35.05000	45.10000	0.27246	44.950	0.0	-0.0040906	0.0		
0.00000	35.15000	45.10000	0.27254	44.950	0.0	-0.0040282	0.0		
0.00000	35.25000	45.10000	0.27260	44.950	0.0	-0.0039672	0.0		
0.00000	35.35000	45.10000	0.27263	44.950	0.0	-0.0039073	0.0		
0.00000	35.45000	45.10000	0.27263	44.950	0.0	-0.0038487	0.0		
0.00000	35.55000	45.10000	0.27261	44.950	0.0	-0.0037912	0.0		
0.00000	35.65000	45.10000	0.27256	44.950	0.0	-0.0037348	0.0		
0.00000	35.75000	45.10000	0.27249	44.950	0.0	-0.0036793	0.0		
0.00000	35.85000	45.10000	0.27240	44.950	0.0	-0.0036254	0.0		
0.00000	35.95000	45.10000	0.27229	44.950	0.0	-0.0035622	0.0		
0.00000	36.05000	45.10000	0.27215	44.950	0.0	-0.0035201	0.0		
0.00000	36.15000	45.10000	0.27199	44.950	0.0	-0.0034690	0.0		
0.00000	36.25000	45.10000	0.27181	44.950	0.0	-0.0034189	0.0		
0.00000	36.35000	45.10000	0.27162	44.950	0.0	-0.0033697	0.0		
0.00000	36.45000	45.10000	0.27140	44.950	0.0	-0.0033215	0.0		
0.00000	36.55000	45.10000	0.27116	44.950	0.0	-0.0032741	0.0		
0.00000	36.65000	45.10000	0.27090	44.950	0.0	-0.0032277	0.0		
0.00000	36.75000	45.10000	0.27063	44.950	0.0	-0.0031821	0.0		
0.00000	36.85000	45.10000	0.27034	44.950	0.0	-0.0031374	0.0		
0.00000	36.95000	45.10000	0.27003	44.950	0.0	-0.003054	0.0		
0.00000	37.05000	45.10000	0.26970	44.950	0.0	-0.0030504	0.0		
0.00000	37.15000	45.10000	0.26936	44.950	0.0	-0.0030081	0.0		
0.00000	37.25000	45.10000	0.26900	44.950	0.0	-0.0029665	0.0		
0.00000	37.35000	45.10000	0.26862	44.950	0.0	-0.0029258	0.0		
0.00000	37.45000	45.10000	0.26823	44.950	0.0	-0.0028857	0.0		
0.00000	37.55000	45.10000	0.26783	44.950	0.0	-0.0028464	0.0		
0.00000	37.65000	45.10000	0.26741	44.950	0.0	-0.0028078	0.0		
0.00000	37.75000	45.10000	0.26698	44.950	0.0	-0.0027699	0.0		
0.00000	37.85000	45.10000	0.26653	44.950	0.0	-0.0027327	0.0		
0.00000	37.95000	45.10000	0.26607	44.950	0.0	-0.0026966	0.0		
0.00000	38.05000	45.10000	0.26560	44.950	0.0	-0.0026602	0.0		
0.00000	38.15000	45.10000	0.26511	44.950	0.0	-0.0026239	0.0		
0.00000	38.25000	45.10000	0.26462	44.950	0.0	-0.0025902	0.0		
0.00000	38.35000	45.10000	0.26411	44.950	0.0	-0.0025561	0.0		
0.00000	38.45000	45.10000	0.26358	44.950	0.0	-0.0025226	0.0		
0.00000	38.55000	45.10000	0.26305	44.950	0.0	-0.0024897	0.0		
0.00000	38.65000	45.10000	0.26251	44.950	0.0	-0.0024574	0.0		
0.00000	38.75000	45.10000	0.26196	44.950	0.0	-0.0024255	0.0		
0.00000	38.85000	45.10000	0.26139	44.950	0.0	-0.0023943	0.0		
0.00000	38.95000	45.10000	0.26082	44.950	0.0	-0.0023633	0.0		
0.00000	39.05000	45.10000	0.26023	44.950	0.0	-0.0023334	0.0		
0.00000	39.15000	45.10000	0.25964	44.950	0.0	-0.0023037	0.0		
0.00000	39.25000	45.10000	0.25904	44.950	0.0	-0.0022708	0.0		
0.00000	39.35000	45.10000	0.25843	44.950	0.0	-0.0022459	0.0		
0.00000	39.45000	45.10000	0.25781	44.950	0.0	-0.0022176	0.0		
0.00000	39.55000	45.10000	0.25718	44.950	0.0	-0.0021899	0.0		
0.00000	39.65000	45.10000	0.25654	44.950	0.0	-0.0021626	0.0		
0.00000	39.75000	45.10000	0.25590	44.950	0.0	-0.0021357	0.0		
0.00000	39.85000	45.10000	0.25525	44.950	0.0	-0.0021093	0.0		
0.00000	39.95000	45.10000	0.25459	44.950	0.0	-0.0020834	0.0		
0.00000	40.05000	45.10000	0.25392	44.950	0.0	-0.0020578	0.0		
0.00000	40.15000	45.10000	0.25325	44.950	0.0	-0.0020327	0.0		
0.00000	40.25000	45.10000	0.25257	44.950	0.0	-0.0020084	0.0		
0.00000	40.35000	45.10000	0.25189	44.950	0.0	-0.0019836	0.0		
0.00000	40.45000	45.10000	0.25124	44.950	0.0	-0.0019631	0.0		
0.00000	40.55000	45.10000	0.24979	44.950	0.0	-0.0019129	0.0		
0.00000	40.75000	45.10000	0.24908	44.950	0.0	-0.0018901	0.0		
0.00000	40.85000	45.10000	0.24837	44.950	0.0	-0.0018676	0.0		
0.00000	40.95000	45.10000	0.24765	44.950	0.0	-0.0018455	0.0		
0.00000	41.05000	45.10000	0.24693	44.950	0.0	-0.0018238	0.0		
0.00000	41.25000	45.10000	0.24546	44.950	0.0	-0.0017813	0.0		
0.00000	41.45000	45.10000	0.24398	44.950	0.0	-0.0017400	0.0		
0.00000	41.55000	45.10							



CARD GEOTECHNICS
LIMITED

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Short Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [m]	Y [m]	Z[Level] [mOD]	Displacement z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
	0.0000	45.75000	45.10000	0.21004	44.950	0.0	-0.0010938	0.0
	0.0000	45.85000	45.10000	0.20923	44.950	0.0	-0.0010829	0.0
	0.0000	45.95000	45.10000	0.20843	44.950	0.0	-0.0010722	0.0
	0.0000	46.05000	45.10000	0.20764	44.950	0.0	-0.0010616	0.0
	0.0000	46.15000	45.10000	0.20684	44.950	0.0	-0.0010512	0.0
	0.0000	46.25000	45.10000	0.20604	44.950	0.0	-0.0010408	0.0
	0.0000	46.35000	45.10000	0.20524	44.950	0.0	-0.0010309	0.0
	0.0000	46.45000	45.10000	0.20445	44.950	0.0	-0.0010206	0.0
	0.0000	46.55000	45.10000	0.20365	44.950	0.0	-0.0010107	0.0
	0.0000	46.65000	45.10000	0.20286	44.950	0.0	-0.0010004	0.0
	0.0000	46.75000	45.10000	0.20207	44.950	0.0	-0.991198E-6	0.0
	0.0000	46.85000	45.10000	0.20127	44.950	0.0	-0.981164E-6	0.0
	0.0000	46.95000	45.10000	0.20049	44.950	0.0	-0.97221E-6	0.0
	0.0000	47.05000	45.10000	0.19970	44.950	0.0	-0.96221E-6	0.0
	0.0000	47.15000	45.10000	0.19891	44.950	0.0	-0.95322E-6	0.0
	0.0000	47.25000	45.10000	0.19812	44.950	0.0	-0.94424E-6	0.0
	0.0000	47.35000	45.10000	0.19734	44.950	0.0	-0.93526E-6	0.0
	0.0000	47.45000	45.10000	0.19656	44.950	0.0	-0.92624E-6	0.0
	0.0000	47.55000	45.10000	0.19577	44.950	0.0	-0.91810E-6	0.0
	0.0000	47.65000	45.10000	0.19499	44.950	0.0	-0.91048E-6	0.0
	0.0000	47.75000	45.10000	0.19422	44.950	0.0	-0.90300E-6	0.0
	0.0000	47.85000	45.10000	0.19344	44.950	0.0	-0.89255E-6	0.0
	0.0000	47.95000	45.10000	0.19267	44.950	0.0	-0.88424E-6	0.0
	0.0000	48.05000	45.10000	0.19189	44.950	0.0	-0.87603E-6	0.0
	0.0000	48.15000	45.10000	0.19112	44.950	0.0	-0.86793E-6	0.0
	0.0000	48.25000	45.10000	0.19035	44.950	0.0	-0.85932E-6	0.0
	0.0000	48.35000	45.10000	0.18958	44.950	0.0	-0.85201E-6	0.0
Pad A	8.19500	8.25100	43.70000	-6.4700	43.650	-0.0022324	-0.24288	4.8703E-6
	8.19500	8.15100	43.70000	-6.0366	43.650	-0.0021892	-0.24015	4.8167E-6
	8.19500	8.05100	43.70000	-5.6154	43.650	-0.0021467	-0.23744	4.7635E-6
	8.19500	7.95100	43.70000	-5.2127	43.650	-0.0021049	-0.23476	4.7106E-6
	8.19500	7.85100	43.70000	-4.8103	43.650	-0.0020736	-0.23218	4.6637E-6
	8.19500	7.75100	43.70000	-4.5197	43.650	-0.0020231	-0.22943	4.6059E-6
	8.19500	7.65100	43.70000	-4.2274	43.650	-0.0019931	-0.22680	4.5541E-6
	8.19500	7.55100	43.70000	-3.9272	43.650	-0.0019439	-0.22418	4.5027E-6
	8.19500	7.45100	43.70000	-3.7532	43.650	-0.0019052	-0.22159	4.4517E-6
	8.19500	7.35100	43.70000	-3.5652	43.650	-0.0018672	-0.21902	4.4010E-6
	8.19500	7.25100	43.70000	-3.4044	43.650	-0.0018299	-0.21648	4.3508E-6
	8.19500	7.15100	43.70000	-3.2668	43.650	-0.0017932	-0.21395	4.3010E-6
	8.19500	7.05100	43.70000	-3.1484	43.650	-0.0017571	-0.21144	4.2516E-6
	8.19500	6.95100	43.70000	-3.0456	43.650	-0.0017217	-0.20896	4.2026E-6
	8.19500	6.85100	43.70000	-2.9554	43.650	-0.0016868	-0.20651	4.1540E-6
	8.19500	6.75100	43.70000	-2.8654	43.650	-0.0016527	-0.20406	4.1082E-6
	8.19500	6.65100	43.70000	-2.8035	43.650	-0.0016151	-0.20165	4.0582E-6
	8.19500	6.55100	43.70000	-2.7384	43.650	-0.0015802	-0.19926	4.0109E-6
	8.19500	6.45100	43.70000	-2.6788	43.650	-0.0015538	-0.19689	3.9640E-6
	8.19500	6.35100	43.70000	-2.6244	43.650	-0.0015220	-0.19454	3.9177E-6
	8.19500	6.25100	43.70000	-2.5751	43.650	-0.0014909	-0.19222	3.8717E-6
	8.19500	6.15100	43.70000	-2.5314	43.650	-0.0014603	-0.18992	3.8262E-6
	8.19500	6.05100	43.70000	-2.4949	43.650	-0.0014303	-0.18765	3.7812E-6
	8.19500	5.95100	43.70000	-2.4677	43.650	-0.0014009	-0.18540	3.7366E-6
	8.19500	5.85100	43.70000	-2.4536	43.650	-0.0013721	-0.18317	3.6924E-6
	8.19500	5.75100	43.70000	-2.4577	43.650	-0.0013438	-0.18097	3.6488E-6
	8.19500	5.65100	43.70000	-2.4865	43.650	-0.0013161	-0.17876	3.6055E-6
	8.19500	5.55100	43.70000	-2.4381	43.650	-0.0012939	-0.17663	3.5623E-6
	8.19500	5.45100	43.70000	-2.4054	43.650	-0.0012622	-0.17450	3.5104E-6
	8.19500	5.35100	43.70000	-2.3799	43.650	-0.0012361	-0.17239	3.4785E-6
	8.19500	5.25100	43.70000	-2.3495	43.650	-0.0012105	-0.17030	3.4371E-6
	8.19500	5.15100	43.70000	-2.3296	43.650	-0.0011855	-0.16824	3.3962E-6
	8.19500	5.05100	43.70000	-2.3089	43.650	-0.0011609	-0.16620	3.3557E-6
	8.19500	4.95100	43.70000	-2.37523	43.650	-0.0011368	-0.16419	3.3156E-6
	8.19500	4.85100	43.70000	-2.3992	43.650	-0.0011133	-0.16220	3.2760E-6
	8.19500	4.75100	43.70000	-2.42131	43.650	-0.0010902	-0.16023	3.2368E-6
	8.19500	4.65100	43.70000	-2.3849	43.650	-0.0010676	-0.15828	3.1981E-6
	8.19500	4.55100	43.70000	-2.45121	43.650	-0.0010454	-0.15636	3.1599E-6
	8.19500	4.45100	43.70000	-2.4184	43.650	-0.0010237	-0.15446	3.1186E-6
	8.19500	4.35100	43.70000	-2.46503	43.650	-0.0010025	-0.15259	3.0846E-6
	8.19500	4.25100	43.70000	-2.47755	43.650	-0.0010005	-0.15073	3.0477E-6
	8.19500	4.15100	43.70000	-2.6812	43.650	-0.0010859	-0.14890	3.0112E-6
	8.19500	4.05100	43.70000	-2.6731	43.650	-0.0010751	-0.14709	2.9751E-6
	8.19500	3.95100	43.70000	-2.6659	43.650	-0.0010652	-0.14530	2.9395E-6
	8.19500	3.85100	43.70000	-2.64329	43.650	-0.0010438	-0.14354	2.9043E-6
	8.19500	3.75100	43.70000	-2.6063	43.650	-0.0010231	-0.14180	2.8695E-6
	8.19500	3.65100	43.70000	-2.5777	43.650	-0.0010044	-0.14007	2.8351E-6
	8.19500	3.55100	43.70000	-2.5484	43.650	-0.0010027	-0.13837	2.8012E-6
	8.19500	3.45100	43.70000	-2.5188	43.650	-0.0010023	-0.13670	2.7676E-6
	8.19500	3.35100	43.70000	-2.4896	43.650	-0.0010026	-0.13501	2.7345E-6
	8.19500	3.25100	43.70000	-2.4600	43.650	-0.0010029	-0.13410	2.6965E-6
	8.19500	3.15100	43.70000	-2.43298	43.650	-0.0010179	-0.13179	2.6695E-6
	8.19500	3.05100	43.70000	-2.4055	43.650	-0.0010109	-0.13019	2.6376E-6
	8.19500	2.95100	43.70000	-2.3788	43.650	-0.0010090	-0.12862	2.6061E-6
	8.19500	2.85100	43.70000	-2.3527	43.650	-0.0010076	-0.12706	2.5750E-6
	8.19500	2.75100	43.70000	-2.3268	43.650	-0.0010062	-0.12553	2.5443E-6
	8.19500	2.65100	43.70000	-2.3008	43.650	-0.0010045	-0.12401	2.5139E-6
	8.19500	2.55100	43.70000	-2.2740	43.650	-0.0010025	-0.12252	2.4840E-6
	8.19500	2.35100	43.70000	-2.2133	43.650	-0.0010026	-0.11958	2.4252E-6
	8.19500	2.25100	43.70000	-2.1757	43.650	-0.0010026	-0.11814	2.3964E-6
	8.19500	2.15100	43.70000	-2.1499	43.650	-0.0010026	-0.11676	2.3676E-6
	8.19500	2.05100	43.70000	-2.1220	43.650	-0.0010026	-0.11532	2.3399E-6
	8.19500	1.95100	43.70000	-2.0974	43.650	-0.0010026	-0.11439	2.3122E-6
	8.19500	1.85100	43.70000	-2.0821	43.650	-0.0010026	-0.11258	2.2848E-6
	8.19500	1.75100	43.70000	-2.07381	43.650	-0.0010026	-0.11123	2.2578E-6
	8.19500	1.65100	43.70000	-2.05487	43.650	-0.0010026	-0.10990	2.2311E-6
	8.19500	1.55100	43.70000	-2.03083	43.650	-0.0010026	-0.10859	2.2048E-6
	8.19500	1.45100	43.70000	-2.01086	43.650	-0.0010026	-0.10730	2.1788E-6
	8.19500	1.35100	43.70000	-2.06917	43.650	-0.0010026	-0.10602	2.1532E-6
	8.19500	1.25100	43.70000	-2.3494	43.650	-0.0010026	-0.10474	2.1279E-6
	8.19500	1.15100						



CARD GEOTECHNICS
LIMITED

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Short Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location	Displacement	Stresses				
x [m]	y [m]	z [mOD]	z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
8,19500	-3,14900	43,70000	-0,15166	43,650	-223,76E-6	-0,063188	1,2893E-6
8,19500	-3,24900	43,70000	-0,13895	43,650	-219,65E-6	-0,062498	1,2753E-6
8,19500	-3,34900	43,70000	-0,12658	43,650	-215,63E-6	-0,061818	1,2616E-6
8,19500	-3,44900	43,70000	-0,11454	43,650	-211,68E-6	-0,061146	1,2479E-6
8,19500	-3,54900	43,70000	-0,10283	43,650	-207,82E-6	-0,060483	1,2345E-6
8,19500	-3,64900	43,70000	-0,091441	43,650	-204,04E-6	-0,059829	1,2213E-6
8,19500	-3,74900	43,70000	-0,080357	43,650	-200,33E-6	-0,059183	1,2082E-6
8,19500	-3,84900	43,70000	-0,069574	43,650	-196,71E-6	-0,058546	1,1953E-6
8,19500	-3,94900	43,70000	-0,058584	43,650	-193,15E-6	-0,057917	1,1825E-6
8,19500	-4,04900	43,70000	-0,048030	43,650	-189,60E-6	-0,057346	1,1657E-6
8,19500	-4,14900	43,70000	-0,038952	43,650	-186,26E-6	-0,056684	1,1575E-6
8,19500	-4,24900	43,70000	-0,029295	43,650	-182,92E-6	-0,056079	1,1452E-6
8,19500	-4,34900	43,70000	-0,019900	43,650	-179,64E-6	-0,055482	1,1331E-6
8,19500	-4,44900	43,70000	-0,010760	43,650	-176,44E-6	-0,054893	1,1212E-6
8,19500	-4,54900	43,70000	-0,0018688	43,650	-173,29E-6	-0,054312	1,1094E-6
8,19500	-4,64900	43,70000	0,0067811	43,650	-170,22E-6	-0,053738	1,0977E-6
8,19500	-4,74900	43,70000	0,015196	43,650	-167,20E-6	-0,053171	1,0862E-6
8,19500	-4,84900	43,70000	0,023383	43,650	-164,24E-6	-0,052611	1,0749E-6
8,19500	-4,94900	43,70000	0,031347	43,650	-161,34E-6	-0,052059	1,0637E-6
8,19500	-5,04900	43,70000	0,039954	43,650	-158,51E-6	-0,051501	1,0526E-6
8,19500	-5,14900	43,70000	0,048631	43,650	-155,70E-6	-0,050976	1,0415E-6
8,19500	-5,24900	43,70000	0,053962	43,650	-153,00E-6	-0,050445	1,0309E-6
8,19500	-5,34900	43,70000	0,061094	43,650	-150,32E-6	-0,049920	1,0202E-6
8,19500	-5,44900	43,70000	0,068030	43,650	-147,71E-6	-0,049402	1,0097E-6
8,19500	-5,54900	43,70000	0,074777	43,650	-145,14E-6	-0,048891	0,0
8,19500	-5,64900	43,70000	0,081338	43,650	-142,62E-6	-0,048388	0,0
8,19500	-5,74900	43,70000	0,087720	43,650	-140,15E-6	-0,047888	0,0
8,19500	-5,84900	43,70000	0,093925	43,650	-137,74E-6	-0,047396	0,0
8,19500	-5,94900	43,70000	0,099958	43,650	-135,37E-6	-0,046910	0,0
8,19500	-6,04900	43,70000	0,10582	43,650	-133,04E-6	-0,046433	0,0
8,19500	-6,14900	43,70000	0,11153	43,650	-130,76E-6	-0,045956	0,0
8,19500	-6,24900	43,70000	0,11707	43,650	-128,50E-6	-0,045479	0,0
8,19500	-6,34900	43,70000	0,12246	43,650	-126,34E-6	-0,045027	0,0
8,19500	-6,44900	43,70000	0,12769	43,650	-124,19E-6	-0,044571	0,0
8,19500	-6,54900	43,70000	0,13279	43,650	-122,08E-6	-0,044120	0,0
8,19500	-6,64900	43,70000	0,13772	43,650	-120,02E-6	-0,043875	0,0
8,19500	-6,74900	43,70000	0,14252	43,650	-117,99E-6	-0,043236	0,0
Pad B	8,49700	43,70000	-6,5825	43,650	-780,20E-6	-0,13146	2,6629E-6
	8,39700	43,70000	-6,1474	43,650	-770,60E-6	-0,13051	2,6439E-6
12,07500	8,29700	43,70000	-5,7247	43,650	-761,05E-6	-0,12956	2,6249E-6
12,07500	8,19700	43,70000	-5,3252	43,650	-751,54E-6	-0,12861	2,6059E-6
12,07500	8,09700	43,70000	-4,9572	43,650	-742,08E-6	-0,12766	2,5869E-6
12,07500	7,99700	43,70000	-4,5559	43,650	-732,67E-6	-0,12671	2,5678E-6
12,07500	7,89700	43,70000	-4,3333	43,650	-722,30E-6	-0,12579	2,5488E-6
12,07500	7,79700	43,70000	-4,0788	43,650	-714,02E-6	-0,12482	2,5387E-6
12,07500	7,69700	43,70000	-3,8599	43,650	-704,78E-6	-0,12387	2,5109E-6
12,07500	7,59700	43,70000	-3,6731	43,650	-695,60E-6	-0,12292	2,4919E-6
12,07500	7,49700	43,70000	-3,5142	43,650	-686,49E-6	-0,12197	2,4730E-6
12,07500	7,39700	43,70000	-3,3789	43,650	-677,44E-6	-0,12103	2,4540E-6
12,07500	7,29700	43,70000	-3,2634	43,650	-668,46E-6	-0,12009	2,4352E-6
12,07500	7,19700	43,70000	-3,1640	43,650	-659,54E-6	-0,11915	2,4163E-6
12,07500	7,09700	43,70000	-3,0776	43,650	-650,70E-6	-0,11821	2,3975E-6
12,07500	6,99700	43,70000	-3,0018	43,650	-641,92E-6	-0,11727	2,3787E-6
12,07500	6,89700	43,70000	-2,9342	43,650	-632,22E-6	-0,11633	2,3606E-6
12,07500	6,79700	43,70000	-2,8332	43,650	-624,54E-6	-0,11511	2,3413E-6
12,07500	6,69700	43,70000	-2,7174	43,650	-616,04E-6	-0,11448	2,3227E-6
12,07500	6,59700	43,70000	-2,7657	43,650	-607,56E-6	-0,11355	2,3041E-6
12,07500	6,49700	43,70000	-2,7173	43,650	-599,16E-6	-0,11263	2,2856E-6
12,07500	6,39700	43,70000	-2,6717	43,650	-590,84E-6	-0,11171	2,2672E-6
12,07500	6,29700	43,70000	-2,6287	43,650	-582,60E-6	-0,11079	2,2488E-6
12,07500	6,19700	43,70000	-2,5882	43,650	-574,43E-6	-0,10998	2,2305E-6
12,07500	6,09700	43,70000	-2,5509	43,650	-566,35E-6	-0,10897	2,2122E-6
12,07500	5,99700	43,70000	-2,5176	43,650	-558,35E-6	-0,10800	2,1940E-6
12,07500	5,89700	43,70000	-2,4899	43,650	-550,43E-6	-0,10711	2,1759E-6
12,07500	5,79700	43,70000	-2,4704	43,650	-542,59E-6	-0,10626	2,1579E-6
12,07500	5,69700	43,70000	-2,4428	43,650	-530,83E-6	-0,10540	2,1410E-6
12,07500	5,59700	43,70000	-2,4124	43,650	-527,11E-6	-0,10448	2,1221E-6
12,07500	5,49700	43,70000	-2,3561	43,650	-519,57E-6	-0,10359	2,1043E-6
12,07500	5,39700	43,70000	-2,3273	43,650	-512,07E-6	-0,10271	2,0866E-6
12,07500	5,29700	43,70000	-2,2680	43,650	-504,64E-6	-0,10184	2,0690E-6
12,07500	5,19700	43,70000	-2,2379	43,650	-497,31E-6	-0,10097	2,0514E-6
12,07500	5,09700	43,70000	-2,1547	43,650	-490,05E-6	-0,10011	2,0340E-6
12,07500	4,99700	43,70000	-2,0329	43,650	-482,89E-6	-0,099237	2,0167E-6
12,07500	4,89700	43,70000	-2,05872	43,650	-475,80E-6	-0,098379	1,9994E-6
12,07500	4,79700	43,70000	-2,0752	43,650	-468,80E-6	-0,097527	1,9823E-6
12,07500	4,69700	43,70000	-2,0407	43,650	-461,89E-6	-0,096679	1,9652E-6
12,07500	4,59700	43,70000	-2,0346	43,650	-453,06E-6	-0,095837	1,9483E-6
12,07500	4,49700	43,70000	-2,0276	43,650	-449,40E-6	-0,095039	1,9320E-6
12,07500	4,39700	43,70000	-2,0171	43,650	-441,65E-6	-0,094167	1,9147E-6
12,07500	4,29700	43,70000	-2,0145	43,650	-435,07E-6	-0,093340	1,8980E-6
12,07500	4,19700	43,70000	-2,0178	43,650	-428,57E-6	-0,092519	1,8815E-6
12,07500	4,09700	43,70000	-2,0089	43,650	-422,16E-6	-0,091703	1,8651E-6
12,07500	3,99700	43,70000	-2,01840	43,650	-415,83E-6	-0,090892	1,8487E-6
12,07500	3,89700	43,70000	-2,00864	43,650	-409,58E-6	-0,090087	1,8325E-6
12,07500	3,79700	43,70000	-2,01711	43,650	-403,41E-6	-0,089287	1,8164E-6
12,07500	3,69700	43,70000	-2,01771	43,650	-397,33E-6	-0,088492	1,8004E-6
12,07500	3,59700	43,70000	-2,01748	43,650	-391,33E-6	-0,088620	1,7845E-6
12,07500	3,49700	43,70000	-2,02447	43,650	-385,40E-6	-0,088620	1,7687E-6
12,07500	3,39700	43,70000	-2,04199	43,650	-379,56E-6	-0,088631	1,7521E-6
12,07500	3,29700	43,70000	-2,06754	43,650	-368,11E-6	-0,088405	1,7220E-6
12,07500	3,09700	43,70000	-2,04279	43,650	-362,51E-6	-0,088344	1,7067E-6
12,07500	2,99700	43,70000	-2,0650	43,650	-356,98E-6	-0,088309	1,6915E-6
12,07500	2,89700	43,70000	-2,05827	43,650	-351,53E-6	-0,088240	1,6764E-6
12,07500	2,79700	43,70000	-2,05068	43,650	-346,16E-6	-0,088159	1,6614E-6
12,07500	2,69700	43,70000	-2,05389	43,650	-340,86E-6	-0,088085	1,6465E-6
12,07500	2,59700	43,70000	-2,05164	43,650	-335,64E-6	-0,088012	1,6317E-6
12,07500	2,49700	43,70000	-2,04925	43,650	-330,49E-6	-0,079401	1,6171E-6
12,07500	2,39700	43,70000	-2,04660				

Name	Location	Displacement	Stresses				
x [m]	y [m]	z [Level] [mOD]	z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
12.07500	-1.90300	43.70000	-0.58158	43.650	-166.65E-6	-0.052996	1.0827E-6
12.07500	-2.00300	43.70000	-0.56142	43.650	-164.09E-6	-0.052514	1.0729E-6
12.07500	-2.10300	43.70000	-0.54159	43.650	-161.58E-6	-0.052036	1.0632E-6
12.07500	-2.20300	43.70000	-0.52208	43.650	-159.11E-6	-0.051562	1.0536E-6
12.07500	-2.30300	43.70000	-0.50291	43.650	-156.67E-6	-0.051094	1.0440E-6
12.07500	-2.40300	43.70000	-0.48409	43.650	-154.28E-6	-0.050633	1.0346E-6
12.07500	-2.50300	43.70000	-0.46562	43.650	-151.92E-6	-0.050179	1.0253E-6
12.07500	-2.60300	43.70000	-0.44751	43.650	-149.60E-6	-0.049715	1.0161E-6
12.07500	-2.70300	43.70000	-0.42975	43.650	-147.32E-6	-0.049265	1.0069E-6
12.07500	-2.80300	43.70000	-0.41144	43.650	-145.04E-6	-0.048819	1.0000E-6
12.07500	-2.90300	43.70000	-0.39527	43.650	-142.87E-6	-0.048378	0.00
12.07500	-3.00300	43.70000	-0.37853	43.650	-140.70E-6	-0.047940	0.00
12.07500	-3.10300	43.70000	-0.36211	43.650	-138.56E-6	-0.047508	0.00
12.07500	-3.20300	43.70000	-0.34600	43.650	-136.46E-6	-0.047079	0.00
12.07500	-3.30300	43.70000	-0.33020	43.650	-134.39E-6	-0.046655	0.00
12.07500	-3.40300	43.70000	-0.31468	43.650	-132.36E-6	-0.046235	0.00
12.07500	-3.50300	43.70000	-0.29944	43.650	-130.35E-6	-0.045819	0.00
12.07500	-3.60300	43.70000	-0.28448	43.650	-128.38E-6	-0.045407	0.00
12.07500	-3.70300	43.70000	-0.26978	43.650	-126.45E-6	-0.045000	0.00
12.07500	-3.80300	43.70000	-0.25535	43.650	-124.54E-6	-0.044596	0.00
12.07500	-3.90300	43.70000	-0.24190	43.650	-122.63E-6	-0.044186	0.00
12.07500	-4.00300	43.70000	-0.22730	43.650	-120.82E-6	-0.043801	0.00
12.07500	-4.10300	43.70000	-0.21366	43.650	-119.01E-6	-0.043410	0.00
12.07500	-4.20300	43.70000	-0.20029	43.650	-117.22E-6	-0.043022	0.00
12.07500	-4.30300	43.70000	-0.18718	43.650	-115.46E-6	-0.042639	0.00
12.07500	-4.40300	43.70000	-0.17432	43.650	-113.74E-6	-0.042259	0.00
12.07500	-4.50300	43.70000	-0.16169	43.650	-112.04E-6	-0.041883	0.00
12.07500	-4.60300	43.70000	-0.14930	43.650	-110.36E-6	-0.041511	0.00
12.07500	-4.70300	43.70000	-0.13712	43.650	-108.72E-6	-0.041142	0.00
12.07500	-4.80300	43.70000	-0.12516	43.650	-107.10E-6	-0.040778	0.00
12.07500	-4.90300	43.70000	-0.11341	43.650	-105.51E-6	-0.040416	0.00
12.07500	-5.00300	43.70000	-0.10166	43.650	-103.92E-6	-0.040059	0.00
12.07500	-5.10300	43.70000	-0.09048	43.650	-102.40E-6	-0.039705	0.00
12.07500	-5.20300	43.70000	-0.07932	43.650	-100.88E-6	-0.039355	0.00
12.07500	-5.30300	43.70000	-0.068363	43.650	-99.38E-6	-0.039008	0.00
12.07500	-5.40300	43.70000	-0.057589	43.650	-97.91E-6	-0.038665	0.00
12.07500	-5.50300	43.70000	-0.047014	43.650	-96.47E-6	-0.038325	0.00
12.07500	-5.60300	43.70000	-0.036642	43.650	-95.05E-6	-0.037989	0.00
12.07500	-5.70300	43.70000	-0.026476	43.650	-93.65E-6	-0.037655	0.00
12.07500	-5.80300	43.70000	-0.016521	43.650	-92.27E-6	-0.037327	0.00
12.07500	-5.90300	43.70000	-0.0067801	43.650	-90.92E-6	-0.037000	0.00
12.07500	-6.00300	43.70000	0.0027419	43.650	-89.59E-6	-0.036677	0.00
12.07500	-6.10300	43.70000	0.012092	43.650	-88.28E-6	-0.036341	0.00
12.07500	-6.20300	43.70000	0.021117	43.650	-86.96E-6	-0.036041	0.00
12.07500	-6.30300	43.70000	0.029966	43.650	-85.24E-6	-0.035729	0.00
12.07500	-6.40300	43.70000	0.038585	43.650	-84.47E-6	-0.035418	0.00
12.07500	-6.50300	43.70000	0.046976	43.650	-83.24E-6	-0.035111	0.00
Pad C							
15.88900	8.25100	43.70000	-6.5255	43.650	-305.86E-6	-0.075740	1.5431E-6
15.88900	8.15100	43.70000	-6.0902	43.650	-303.19E-6	-0.075349	1.5352E-6
15.88900	8.05100	43.70000	-5.6672	43.650	-300.52E-6	-0.074958	1.5273E-6
15.88900	7.95100	43.70000	-5.2671	43.650	-297.85E-6	-0.074565	1.5193E-6
15.88900	7.85100	43.70000	-4.8982	43.650	-295.18E-6	-0.074176	1.5114E-6
15.88900	7.75100	43.70000	-4.5565	43.650	-292.52E-6	-0.073775	1.5034E-6
15.88900	7.65100	43.70000	-4.2413	43.650	-289.85E-6	-0.073374	1.4954E-6
15.88900	7.55100	43.70000	-4.0445	43.650	-288.20E-6	-0.073011	1.4873E-6
15.88900	7.45100	43.70000	-3.7929	43.650	-284.54E-6	-0.072652	1.4792E-6
15.88900	7.35100	43.70000	-3.6027	43.650	-281.89E-6	-0.072183	1.4712E-6
15.88900	7.25100	43.70000	-3.4339	43.650	-279.24E-6	-0.071783	1.4631E-6
15.88900	7.15100	43.70000	-3.3002	43.650	-276.60E-6	-0.071382	1.4550E-6
15.88900	7.05100	43.70000	-3.1798	43.650	-273.97E-6	-0.070981	1.4469E-6
15.88900	6.95100	43.70000	-3.0751	43.650	-271.34E-6	-0.070579	1.4388E-6
15.88900	6.85100	43.70000	-2.9831	43.650	-268.72E-6	-0.070178	1.4306E-6
15.88900	6.75100	43.70000	-2.9013	43.650	-266.11E-6	-0.069773	1.4225E-6
15.88900	6.65100	43.70000	-2.8277	43.650	-263.51E-6	-0.069373	1.4143E-6
15.88900	6.55100	43.70000	-2.7606	43.650	-260.92E-6	-0.068966	1.4062E-6
15.88900	6.45100	43.70000	-2.6939	43.650	-258.33E-6	-0.068559	1.3981E-6
15.88900	6.35100	43.70000	-2.6416	43.650	-255.74E-6	-0.068159	1.3908E-6
15.88900	6.25100	43.70000	-2.5882	43.650	-253.19E-6	-0.067755	1.3817E-6
15.88900	6.15100	43.70000	-2.5362	43.650	-250.64E-6	-0.067351	1.3735E-6
15.88900	6.05100	43.70000	-2.4929	43.650	-248.10E-6	-0.066947	1.3653E-6
15.88900	5.95100	43.70000	-2.4518	43.650	-245.56E-6	-0.066543	1.3572E-6
15.88900	5.85100	43.70000	-2.4168	43.650	-243.05E-6	-0.066140	1.3490E-6
15.88900	5.75100	43.70000	-2.3900	43.650	-240.54E-6	-0.065736	1.3408E-6
15.88900	5.65100	43.70000	-2.3747	43.650	-238.04E-6	-0.065333	1.3327E-6
15.88900	5.55100	43.70000	-2.3757	43.650	-235.56E-6	-0.064930	1.3245E-6
15.88900	5.45100	43.70000	-2.3990	43.650	-233.10E-6	-0.064520	1.3164E-6
15.88900	5.35100	43.70000	-2.4522	43.650	-230.64E-6	-0.064120	1.3082E-6
15.88900	5.25100	43.70000	-2.4125	43.650	-228.18E-6	-0.063635	1.3001E-6
15.88900	5.15100	43.70000	-2.6752	43.650	-225.78E-6	-0.063324	1.2920E-6
15.88900	5.05100	43.70000	-2.8499	43.650	-223.36E-6	-0.063224	1.2839E-6
15.88900	4.95100	43.70000	-3.0575	43.650	-220.97E-6	-0.062525	1.2758E-6
15.88900	4.85100	43.70000	-3.2804	43.650	-218.59E-6	-0.062126	1.2677E-6
15.88900	4.75100	43.70000	-3.4963	43.650	-216.22E-6	-0.061728	1.2597E-6
15.88900	4.65100	43.70000	-3.6855	43.650	-213.87E-6	-0.061331	1.2516E-6
15.88900	4.55100	43.70000	-3.8362	43.650	-211.54E-6	-0.060935	1.2436E-6
15.88900	4.45100	43.70000	-3.9453	43.650	-209.22E-6	-0.060540	1.2356E-6
15.88900	4.35100	43.70000	-4.0166	43.650	-206.92E-6	-0.060144	1.2276E-6
15.88900	4.25100	43.70000	-4.0572	43.650	-204.63E-6	-0.059753	1.2197E-6
15.88900	4.15100	43.70000	-4.1466	43.650	-202.36E-6	-0.059361	1.2118E-6
15.88900	4.05100	43.70000	-4.0760	43.650	-200.11E-6	-0.058959	1.2038E-6
15.88900	3.95100	43.70000	-4.0662	43.650	-197.87E-6	-0.058579	1.1959E-6
15.88900	3.85100	43.70000	-4.0491	43.650	-195.66E-6	-0.058191	1.1880E-6
15.88900	3.75100	43.70000	-4.0276	43.650	-193.45E-6	-0.057803	1.1801E-6
15.88900	3.65100	43.70000	-4.0036	43.650	-191.27E-6	-0.057417	1.1723E-6
15.88900	3.55100	43.70000	-3.9781	43.650	-189.11E-6	-0.057031	1.1645E-6
15.88900	3.45100	43.70000	-3.9521	43.650	-186.96E-6	-0.056644	1.1567E-6
15.88900	3.35100	43.70000	-3.9261	43.650	-184.83E-6	-0.056265	1.1490E-6



**CARD GEOTECHNICS
LIMITED**

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Short Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location y [m]	Z [Level] [mOD]	Displacement		Stresses			Vert Strain [-]
				Z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]		
15.88900	-1.14900	43.70000	-3.0145	43.650	-107.43E-6	-0.040810	0.0		
15.88900	-1.24900	43.70000	-2.9968	43.650	-106.11E-6	-0.040511	0.0		
15.88900	-1.34900	43.70000	-2.9793	43.650	-104.79E-6	-0.040213	0.0		
15.88900	-1.44900	43.70000	-2.9620	43.650	-103.50E-6	-0.039917	0.0		
15.88900	-1.54900	43.70000	-2.9450	43.650	-102.22E-6	-0.039623	0.0		
15.88900	-1.64900	43.70000	-2.9282	43.650	-100.95E-6	-0.039331	0.0		
15.88900	-1.74900	43.70000	-2.9117	43.650	-99.69E-6	-0.03904	0.0		
15.88900	-1.84900	43.70000	-2.8955	43.650	-98.46E-6	-0.038753	0.0		
15.88900	-1.94900	43.70000	-2.8796	43.650	-97.23E-6	-0.038467	0.0		
15.88900	-2.04900	43.70000	-2.8640	43.650	-96.00E-6	-0.038180	0.0		
15.88900	-2.14900	43.70000	-2.8486	43.650	-94.84E-6	-0.037901	0.0		
15.88900	-2.24900	43.70000	-2.8335	43.650	-93.66E-6	-0.037621	0.0		
15.88900	-2.34900	43.70000	-2.8183	43.650	-92.49E-6	-0.037343	0.0		
15.88900	-2.44900	43.70000	-2.8028	43.650	-91.34E-6	-0.037067	0.0		
15.88900	-2.54900	43.70000	-2.7866	43.650	-90.21E-6	-0.036793	0.0		
15.88900	-2.64900	43.70000	-2.7689	43.650	-89.09E-6	-0.036520	0.0		
15.88900	-2.74900	43.70000	-2.7486	43.650	-87.91E-6	-0.03625	0.0		
15.88900	-2.84900	43.70000	-2.7240	43.650	-86.88E-6	-0.03598	0.0		
15.88900	-2.94900	43.70000	-2.6925	43.650	-85.80E-6	-0.035715	0.0		
15.88900	-3.04900	43.70000	-2.6507	43.650	-84.73E-6	-0.03545	0.0		
15.88900	-3.14900	43.70000	-2.6134	43.650	-83.66E-6	-0.035188	0.0		
15.88900	-3.24900	43.70000	-2.5143	43.650	-82.64E-6	-0.034927	0.0		
15.88900	-3.34900	43.70000	-2.4060	43.650	-81.61E-6	-0.034668	0.0		
15.88900	-3.44900	43.70000	-2.2610	43.650	-80.59E-6	-0.034411	0.0		
15.88900	-3.54900	43.70000	-2.0745	43.650	-79.59E-6	-0.034156	0.0		
15.88900	-3.64900	43.70000	-1.8476	43.650	-78.60E-6	-0.033903	0.0		
15.88900	-3.74900	43.70000	-1.5900	43.650	-77.62E-6	-0.033652	0.0		
15.88900	-3.84900	43.70000	-1.3199	43.650	-76.65E-6	-0.033402	0.0		
15.88900	-3.94900	43.70000	-1.0596	43.650	-75.70E-6	-0.033155	0.0		
15.88900	-4.04900	43.70000	-0.82820	43.650	-74.75E-6	-0.032905	0.0		
15.88900	-4.14900	43.70000	-0.63673	43.650	-73.82E-6	-0.032665	0.0		
15.88900	-4.24900	43.70000	-0.42850	43.650	-72.90E-6	-0.032425	0.0		
15.88900	-4.34900	43.70000	-0.37595	43.650	-72.00E-6	-0.032183	0.0		
15.88900	-4.44900	43.70000	-0.29519	43.650	-71.10E-6	-0.031944	0.0		
15.88900	-4.54900	43.70000	-0.23752	43.650	-70.22E-6	-0.031707	0.0		
15.88900	-4.64900	43.70000	-0.19637	43.650	-69.34E-6	-0.031473	0.0		
15.88900	-4.74900	43.70000	-0.16658	43.650	-68.48E-6	-0.031239	0.0		
15.88900	-4.84900	43.70000	-0.14439	43.650	-67.63E-6	-0.031008	0.0		
15.88900	-4.94900	43.70000	-0.12714	43.650	-66.79E-6	-0.030779	0.0		
15.88900	-5.04900	43.70000	-0.11304	43.650	-65.96E-6	-0.030555	0.0		
15.88900	-5.14900	43.70000	-0.10087	43.650	-65.14E-6	-0.030325	0.0		
15.88900	-5.24900	43.70000	-0.089853	43.650	-64.33E-6	-0.030108	0.0		
15.88900	-5.34900	43.70000	-0.079504	43.650	-63.54E-6	-0.029918	0.0		
15.88900	-5.44900	43.70000	-0.06812	43.650	-62.75E-6	-0.029657	0.0		
15.88900	-5.54900	43.70000	-0.057700	43.650	-61.97E-6	-0.029438	0.0		
15.88900	-5.64900	43.70000	-0.049971	43.650	-61.20E-6	-0.029221	0.0		
15.88900	-5.74900	43.70000	-0.040283	43.650	-60.44E-6	-0.029005	0.0		
15.88900	-5.84900	43.70000	-0.030623	43.650	-59.70E-6	-0.028791	0.0		
15.88900	-5.94900	43.70000	-0.021001	43.650	-58.96E-6	-0.028579	0.0		
15.88900	-6.04900	43.70000	-0.011433	43.650	-58.23E-6	-0.028368	0.0		
15.88900	-6.14900	43.70000	-0.0019450	43.650	-57.51E-6	-0.028159	0.0		
15.88900	-6.24900	43.70000	0.0074384	43.650	-56.80E-6	-0.027952	0.0		
15.88900	-6.34900	43.70000	0.016693	43.650	-56.10E-6	-0.027744	0.0		
15.88900	-6.44900	43.70000	0.025895	43.650	-55.40E-6	-0.027549	0.0		
15.88900	-6.54900	43.70000	0.034725	43.650	-54.71E-6	-0.027319	0.0		
15.88900	-6.64900	43.70000	0.043466	43.650	-54.05E-6	-0.027138	0.0		
15.88900	-6.74900	43.70000	0.052004	43.650	-53.39E-6	-0.026939	0.0		
15.88900	-6.84900	43.70000	0.060327	43.650	-52.72E-6	-0.026741	0.0		
15.88900	-6.94900	43.70000	0.068428	43.650	-52.08E-6	-0.026545	0.0		
15.88900	-7.04900	43.70000	0.076299	43.650	-51.44E-6	-0.026350	0.0		
15.88900	-7.14900	43.70000	0.083938	43.650	-50.80E-6	-0.026157	0.0		
15.88900	-7.24900	43.70000	0.091341	43.650	-50.18E-6	-0.02596	0.0		
15.88900	-7.34900	43.70000	0.098508	43.650	-49.56E-6	-0.025776	0.0		
15.88900	-7.44900	43.70000	0.10544	43.650	-48.96E-6	-0.025587	0.0		
15.88900	-7.54900	43.70000	0.11214	43.650	-48.36E-6	-0.025409	0.0		
15.88900	-7.64900	43.70000	0.11861	43.650	-47.74E-6	-0.025227	0.0		
15.88900	-7.74900	43.70000	0.12486	43.650	-47.18E-6	-0.025031	0.0		
15.88900	-7.84900	43.70000	0.13089	43.650	-46.61E-6	-0.024848	0.0		
15.88900	-7.94900	43.70000	0.13668	43.650	-46.04E-6	-0.024667	0.0		
15.88900	-8.04900	43.70000	0.14228	43.650	-45.47E-6	-0.024488	0.0		
15.88900	-8.14900	43.70000	0.14767	43.650	-44.92E-6	-0.024310	0.0		
15.88900	-8.24900	43.70000	0.15285	43.650	-44.37E-6	-0.024133	0.0		
15.88900	-8.34900	43.70000	0.15785	43.650	-43.83E-6	-0.023958	0.0		
15.88900	-8.44900	43.70000	0.16265	43.650	-43.30E-6	-0.023784	0.0		
15.88900	-8.54900	43.70000	0.16727	43.650	-42.77E-6	-0.023611	0.0		
15.88900	-8.64900	43.70000	0.17172	43.650	-42.25E-6	-0.023440	0.0		
15.88900	-8.74900	43.70000	0.17599	43.650	-41.74E-6	-0.023271	0.0		
15.88900	-8.84900	43.70000	0.18100	43.650	-41.23E-6	-0.023122	0.0		
15.88900	-8.94900	43.70000	0.18404	43.650	-40.74E-6	-0.022935	0.0		
15.88900	-9.04900	43.70000	0.18783	43.650	-40.24E-6	-0.022770	0.0		
15.88900	-9.14900	43.70000	0.19148	43.650	-39.76E-6	-0.022606	0.0		
15.88900	-9.24900	43.70000	0.19497	43.650	-39.28E-6	-0.022443	0.0		
15.88900	-9.34900	43.70000	0.19833	43.650	-38.80E-6	-0.022281	0.0		
15.88900	-9.44900	43.70000	0.20155	43.650	-38.34E-6	-0.022121	0.0		
15.88900	-9.54900	43.70000	0.20465	43.650	-37.80E-6	-0.021962	0.0		
15.88900	-9.64900	43.70000	0.20761	43.650	-37.42E-6	-0.021804	0.0		
15.88900	-9.74900	43.70000	0.21046	43.650	-36.97E-6	-0.021648	0.0		
15.88900	-9.84900	43.70000	0.21319	43.650	-36.53E-6	-0.021493	0.0		
15.88900	-9.94900	43.70000	0.21560	43.650	-36.09E-6	-0.021336	0.0		
15.88900	-10.04900	43.70000	0.21831	43.650	-35.65E-6	-0.021186	0.0		
15.88900	-10.14900	43.70000	0.22071	43.650	-35.23E-6	-0.021035	0.0		
15.88900	-10.24900	43.70000	0.22301	43.650	-34.81E-6	-0.020885	0.0		
15.88900	-10.34900	43.70000	0.22521	43.650	-34.39E-6	-0.020736	0.0		
15.88900	-10.44900	43.7							

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Analysis Options

Analysis: Boussinesq
 Global Poisson's ratio: 0.20
 Maximum allowable ratio between values of E: 1.5
 Horizontal rigid boundary level: 15.00 [m OD]
 Stiffness for horizontal displacement calculations: Weighted average
 Using legacy heave correction factor: No
 Displacements at load centroids: Yes

Soil Profiles

Layer	Level at top	Number of intermediate displacement levels	Youngs Modulus [kN/m²]	Poissons ratio	Non-linear curve
1	46.100	5	15000.	0.20000	None
2	44.500	5	18000.	0.20000	None
3	43.500	5	18000.	0.20000	None

Soil Zones

zone	Name	X coordinates min [m]	X coordinates max [m]	Y coordinates min [m]	Y coordinates max [m]	Profile
1	1	-10.0000	40.0000	-15.0000	55.0000	Soil Profile 1

Non-linear Curve Coordinates - Non-linear Curve 1

Point	Strain	Factor
	[%]	

Load Data

Load ref.	Name	Shape	Orientation of Plane	Centre of load (Global)	Angle of rotation (level)	Width x from local x	Length y or Radius	Polygon Coordinates	Load value				
				[m] X	[m] Y	[m] Z	[Degrees]	N/A	Number of tolerance rectangles	Normal (local z) [kN/m²]	Tangential (local y) [kN/m²]	N/A	N/A
1 Extension Excavation	Extension Excavation	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (0,18.4) (25.9,18.4) (25.9,16.2) (26.4,16.2) (26.4,9.44) (25.9,9.44) (25.9,6.82) (17.6,6.83) (17.6,3.81) (14.2,8.25) (14.2,8.5) (14.2,8.5) (9.97,8.25) (6.42,8.25) (6.42,6.83) (0,6.83)	10.000	6	-123.40	N/A	N/A
2 Barrie House Excavation	Barrie House Excavation	Polygonal	Horizontal	N/A	N/A	42.70000	N/A	N/A (6.45,5.13) (8.28,5.13) (8.28,4.89) (16.2,4.88) (16.2,-3.81) (13.5,-3.81) (13.5,-0.607) (13.6,-0.607) (13.6,1.29) (7.09,1.29) (7.09,0.22) (6.44,0.22) (6.44,5.13)	10.000	5	-46.080	N/A	N/A
3 Porters Lodge Demolition	Porters Lodge Demolition	Polygonal	Horizontal	N/A	N/A	45.00000	N/A	N/A (-1.06,19.1) (-1.06,13.4) (-8.06,19.1)	10.000	1	-30.000	N/A	N/A
4 1	1	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (0,18.1) (3.64,18.1) (3.64,14.7) (0,2,14.7)	10.000	1	86.412	N/A	N/A
5 2	2	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (10.9,18.1) (10.9,14.7) (3.64,14.7) (3.64,18.1)	10.000	1	71.457	N/A	N/A
6 3	3	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (0,2,14.7) (3.64,14.7) (3.64,7.03) (0,2,7.03)	10.000	1	55.763	N/A	N/A
7 4	4	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (3.64,7.03) (3.64,14.7) (10.9,14.7) (10.9,18.1) (13.7,18.1) (13.7,14.7) (14.4,8.7) (14.4,8.09) (18.6,8.45) (18.6,7.03) (18.7,0.02) (18.8,0.45) (14.4,8.45) (14.4,8.7) (9.77,8.7) (9.77,8.45) (6.22,8.45) (6.22,7.03)	10.000	7	76.974	N/A	N/A
8 5	5	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (13.7,14.7) (13.7,18.1) (25.6,18.1) (25.6,15.9) (26.1,15.9) (26.1,14.7)	10.000	2	70.610	N/A	N/A
9 6	6	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (17.8,14.7) (26.1,14.7) (26.1,10.9) (17.8,10.9)	10.000	1	32.130	N/A	N/A
10 7	7	Polygonal	Horizontal	N/A	N/A	39.77000	N/A	N/A (14.4,8.7) (25.6,8.74) (25.6,7.03) (14.4,7.03)	10.000	2	61.784	N/A	N/A
11 Wall Top Half	Wall Top Half	Polygonal	Horizontal	N/A	N/A	39.82000	N/A	N/A (0,18.4) (25.9,18.4) (25.9,16.2) (26.4,16.2) (26.4,9.44) (26.1,9.74) (26.1,15.9) (25.6,15.9) (25.6,18.1) (0,2,18.1)	10.000	7	136.63	N/A	N/A
12 Wall Bottom Half	Wall Bottom Half	Polygonal	Horizontal	N/A	N/A	39.82000	N/A	N/A (0,18.4) (0,2,18.1) (0,2,7.03) (6.22,7.03) (6.22,8.45) (9.77,8.45) (9.77,8.7) (14.4,8.7) (14.4,8.45) (18.6,8.45) (18.7,0.02) (25.6,8.45) (25.6,9.74) (26.1,9.74) (26.4,9.44) (25.9,9.44) (25.9,6.82) (17.6,6.83) (17.6,8.25) (14.2,8.25) (14.2,8.5) (9.97,8.5) (9.97,8.25) (6.42,8.25) (6.42,6.83) (0,6.83)	10.000	14	136.63	N/A	N/A
13 Slab	Slab	Polygonal	Horizontal	N/A	N/A	39.82000	N/A	N/A (0,2,18.1) (25.6,18.1) (25.6,15.9) (26.1,15.9) (26.1,9.44) (25.6,9.74) (25.6,18.1) (25.6,18.03) (18.8,4.5) (14.4,8.45) (14.4,8.7) (14.4,8.7) (9.77,8.45) (6.22,8.45) (6.22,7.03) (0,2,7.03)	10.000	6	29.500	N/A	N/A
14 Underpin	Underpin	Polygonal	Horizontal	N/A	N/A	39.22000	N/A	N/A (25.9,8.2) (25.9,6) (17.6,6) (17.6,8.2)	10.000	1	45.000	N/A	N/A
15 8	8	Polygonal	Horizontal	N/A	N/A	42.70000	N/A	N/A (6.45,5.13) (8.28,5.13) (8.28,4.89) (16.2,4.88) (16.2,-3.81) (13.5,-3.81) (13.5,-0.607) (13.6,-0.607) (13.6,1.29) (7.09,1.29) (7.09,0.22) (6.44,0.22) (6.44,5.13)	10.000	5	7.5000	N/A	N/A

Polygonal Loads' Rectangles

No.	Centre of load x	Angle of rotation y	Width x	Depth y	
	x	y	local x	from	
			global x		
Load 1 : Extension Excavation (Edge 2 optimal)	3.20850	12.59050	0.0	6.4170	11.519
	2 8.19550	13.30050	0.0	3.5570	10.099
	3 12.07450	13.42350	0.0	4.2010	9.8530
	4 15.88900	13.30050	0.0	3.4280	10.099
	5 21.73300	12.58825	0.0	8.2600	11.524
	6 26.15350	12.84050	0.0	0.56700	6.8010
Load 2 : Barrie House Excavation (Edge 2 optimal)	1 7.35875	5.00900	-90.000	0.23800	1.8455
	2 11.31698	3.08900	-90.000	3.5920	9.7620
	3 6.76100	0.75650	-90.000	1.0730	0.65000

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Made by ALP	Date	Checked

No. Centre of load Angle of local x from global x

4 14.87619 0.34300 -90.000 1.9000 2.6404
5 14.84096 -2.20650 -90.000 3.1990 2.7079

Load 3 : Porters Lodge Demolition

(Edge 2 optimal)
1 -4.56400 16.25700 -90.000 5.7500 7.0000

Load 4 : 1

(Edge 2 optimal)
1 1.92150 16.44450 0.0 3.4430 3.4110

Load 5 : 2

(Edge 2 optimal)
1 7.25700 16.42200 -90.000 3.4560 7.2280

Load 6 : 3

(Edge 2 optimal)
1 1.92150 10.88500 0.0 3.4430 7.7080

Load 7 : 4

(Edge 2 optimal)
1 4.93200 7.74100 90.000 1.4200 2.5780
2 6.70850 8.57400 90.000 0.24600 6.1310
3 18.26169 7.74000 90.000 1.4220 0.61737
4 16.47315 8.57400 90.000 0.24600 4.1953
5 11.10722 9.78350 90.000 2.1730 14.928
6 10.69876 12.78200 90.000 3.8240 14.112
7 12.27050 16.43750 90.000 3.4250 2.7990

Load 8 : 5

(Edge 2 optimal)
1 19.90250 15.33550 90.000 1.2110 12.469
2 19.61900 17.04550 90.000 2.2090 11.902

Load 9 : 6

(Edge 2 optimal)
1 21.94450 12.80000 0.0 8.3850 3.8600

Load 10 : 7

(Edge 2 optimal)
1 22.06760 8.94800 -0.032792 6.9890 3.8440
2 25.85000 10.30500 -0.032792 0.57335 1.1300

Load 11 : Wall Top Half

(Edge 10 optimal)
1 12.88500 18.25000 0.0 25.370 0.20000
2 25.72000 17.14550 0.0 0.30000 2.4090
3 26.11600 16.09100 0.0 0.28000 0.00000
4 21.28700 16.14550 0.0 0.28000 6.6510
5 0.03333 18.33333 0.0 0.066667 0.033333
6 0.10000 18.30000 0.0 0.066667 0.10000
7 0.16667 18.26667 0.0 0.066667 0.16667

Load 12 : Wall Bottom Half

(Edge 19 optimal)
1 3.20850 6.93108 89.956 0.19525 6.4170
2 6.31900 7.64100 89.956 1.2201 0.19600
3 8.09750 8.35100 89.956 0.19713 3.7530
4 21.73204 6.92663 89.956 0.19895 8.2581
5 25.71154 8.23200 89.956 2.4162 0.30108
6 25.71156 9.55260 89.956 0.14967 0.0111
7 21.88669 7.66032 89.956 0.14967 0.65133
8 37.77771 7.64000 89.956 0.14967 0.34943
9 16.06396 8.35094 89.956 0.19753 3.7779
10 12.07500 8.59692 89.956 0.19664 4.6020
11 0.10000 12.59058 89.956 11.119 0.20000
12 0.08333 18.18340 89.956 0.066616 0.16667
13 0.05000 18.25004 89.956 0.066616 0.10000
14 0.01667 18.31668 89.956 0.066616 0.033333

Load 13 : Slab

(Edge 2 optimal)
1 3.21050 12.59050 0.0 6.0210 11.119
2 7.07500 13.30050 0.0 3.5530 9.6390
3 12.07500 13.42350 0.0 4.6020 9.4530
4 16.16450 13.30050 0.0 3.5570 9.6390
5 21.75700 12.58925 0.0 7.5680 11.123
6 25.85350 12.84075 0.0 0.56700 6.2005

Load 14 : Underpin

(Edge 2 optimal)
1 21.73200 7.10150 -90.000 2.1950 8.2580

Load 15 : 8

(Edge 2 optimal)
1 7.35875 5.00900 -90.000 0.23800 1.8455
2 11.31698 3.08900 -90.000 3.5920 9.7620
3 6.76100 0.75650 -90.000 1.0730 0.65000
4 14.87619 0.34300 -90.000 1.9000 2.6404
5 14.84096 -2.20650 -90.000 3.1990 2.7079

Displacement Data

Ref.	Type	Name	Direction of extrusion	Line/Line for extrusion			No. of intrvls across extrusion/line	Extrusion Depth [m]	No. of intrvls along extrusion	Calculate	Show Detailed results
				Extrusion	X [m]	Y [m]	Z (level) [m]	Second point X [m]	Y [m]	Z (level) [m]	
1	Line	72	N/A	21.37000	18.35000	45.10000	21.37000	48.35000	45.10000	300	N/A
2	Line	Kingsland	N/A	0.00000	18.35000	45.10000	0.00000	48.35000	45.10000	300	N/A
3	Line	Kingsland	N/A	8.19500	8.25100	43.70000	8.19500	-6.74900	43.70000	150	N/A
4	Line	Pad A	N/A	12.07500	8.49700	43.70000	12.07500	-5.50300	43.70000	150	N/A
5	Line	Pad B	N/A	15.88900	8.25100	43.70000	15.88900	-11.74900	43.70000	200	N/A
6	Grid	Grid 2	Global X	-30.00000	-30.00000	46.10000	N/A	70.00000	46.10000	90	90.00000
7	Grid	Grid 2	Global X	-30.00000	-30.00000	39.77000	N/A	70.00000	39.77000	90	90.00000

Warnings

(1) One or more displacement grids or lines have numbers of intervals of at least 100. Large numbers of intervals will slow the analysis.

RESULTS FOR GRIDS

Analysis: Boussinesq
Global Poisson's ratio: 0.20
Horizontal rigid boundary level: 15.00 [m OD]

The maximum displacement difference between the Boussinesq method (-6.9296mm) and the Mindlin method (-4.8962mm) occurs at point X = 8.19500m, Y = 3.95100m, level = 43.700mD, and is 2.0333m.

Name	Location X [m]	Y [m]	Z [Level] [mOD]	Displacement Z [mm]	Stresses Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
Extension	13.16898	12.89018	39.77000	-3.7755	37.548	-17.892	-35.819	-324.94E-6
Barrie House	12.18661	1.87954	42.70000	-5.4392	39.990	-23.381	-31.606	-673.45E-6
Porters Lodge Demolition	-4.56400	16.25700	45.00000	-6.7235	44.875	-29.999	-69.423	-0.0014742
1	1.92150	16.44450	39.77000	-2.5649	37.548	-12.158	-23.077	-226.55E-6
2	7.25700	16.42200	39.77000	-3.5104	37.548	-18.945	-32.130	-370.40E-6
3	1.92150	10.88900	39.77000	-4.8181	37.548	-30.738	-44.129	-637.29E-6
4	10.84029	11.85863	39.77000	-3.6497	37.548	-17.374	-33.982	-319.17E-6
5	19.72099	16.42040	39.77000	-3.4658	37.548	-23.847	-43.227	-453.59E-6
6	21.37000	12.80000	39.77000	-7.4012	37.548	-51.753	-47.447	-0.0001731
7	22.11590	8.97008	39.77000	-3.7709	37.548	-21.153	-32.499	-422.44E-6
Wall Top Half	17.15497	16.77821	39.82000	-3.9112	37.590	-20.267	-37.228	-385.00E-6
Wall Bottom Half	11.15787	8.93432	39.82000	-2.9956	37.590	-12.446	-26.209	-221.17E-6
Slab	13.10849	12.91205	39.82000	-3.7891	37.590	-17.874	-35.930	-325.39E-6
Underpin	21.73200	7.10150	39.22000	-3.28954	37.086	-8.2884	-1.8428	223.25E-6
8	12.18661	1.87954	42.70000	-5.4392	39.990	-23.381	-31.603	-673.45E-6
72 Kingsland	21.37000	18.45000	45.10000	-2.3408	44.950	0.0	-0.0013493	0.0
21.37000	18.55000	45.10000	-2.2073	44.950	0.0	-0.0013466	0.0	
21.37000	18.65000	45.10000	-2.0486	44.950	0.0	-0.0013466	0.0	
21.37000	18.75000	45.10000	-1.9744	44.950	0.0	-0.0013436	0.0	
21.37000	18.85000	45.10000	-1.8761	44.950	0.0	-0.0013421	0.0	
21.37000	18.95000	45.10000	-1.7893	44.950	0.0	-0.0013405	0.0	



**CARD GEOTECHNICS
LIMITED**

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location y [m]	z [Level] [mOD]	Displacement z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
21.37000	19.05000	45.10000	-1.7128	44.950	0.0	-0.0013388	0.0	
21.37000	19.15000	45.10000	-1.6452	44.950	0.0	-0.0013371	0.0	
21.37000	19.25000	45.10000	-1.5853	44.950	0.0	-0.0013353	0.0	
21.37000	19.35000	45.10000	-1.5315	44.950	0.0	-0.0013335	0.0	
21.37000	19.45000	45.10000	-1.4829	44.950	0.0	-0.0013316	0.0	
21.37000	19.55000	45.10000	-1.4383	44.950	0.0	-0.0013296	0.0	
21.37000	19.65000	45.10000	-1.3972	44.950	0.0	-0.0013276	0.0	
21.37000	19.75000	45.10000	-1.3588	44.950	0.0	-0.0013256	0.0	
21.37000	19.85000	45.10000	-1.3227	44.950	0.0	-0.0013234	0.0	
21.37000	19.95000	45.10000	-1.2865	44.950	0.0	-0.0013212	0.0	
21.37000	20.05000	45.10000	-1.2558	44.950	0.0	-0.0013191	0.0	
21.37000	20.15000	45.10000	-1.2246	44.950	0.0	-0.0013168	0.0	
21.37000	20.25000	45.10000	-1.1946	44.950	0.0	-0.0013145	0.0	
21.37000	20.35000	45.10000	-1.1656	44.950	0.0	-0.0013121	0.0	
21.37000	20.45000	45.10000	-1.1377	44.950	0.0	-0.0013097	0.0	
21.37000	20.55000	45.10000	-1.1106	44.950	0.0	-0.0013072	0.0	
21.37000	20.65000	45.10000	-1.0844	44.950	0.0	-0.0013047	0.0	
21.37000	20.75000	45.10000	-1.0589	44.950	0.0	-0.0013021	0.0	
21.37000	20.85000	45.10000	-1.0342	44.950	0.0	-0.0012994	0.0	
21.37000	20.95000	45.10000	-1.0102	44.950	0.0	-0.0012967	0.0	
21.37000	21.05000	45.10000	-9.9868	44.950	0.0	-0.0012940	0.0	
21.37000	21.15000	45.10000	-9.9619	44.950	0.0	-0.0012913	0.0	
21.37000	21.25000	45.10000	-9.94212	44.950	0.0	-0.0012885	0.0	
21.37000	21.35000	45.10000	-9.92065	44.950	0.0	-0.0012856	0.0	
21.37000	21.45000	45.10000	-9.89976	44.950	0.0	-0.0012827	0.0	
21.37000	21.55000	45.10000	-9.87943	44.950	0.0	-0.0012797	0.0	
21.37000	21.65000	45.10000	-9.85964	44.950	0.0	-0.0012767	0.0	
21.37000	21.75000	45.10000	-9.84038	44.950	0.0	-0.0012737	0.0	
21.37000	21.85000	45.10000	-9.82163	44.950	0.0	-0.0012707	0.0	
21.37000	21.95000	45.10000	-9.80337	44.950	0.0	-0.0012675	0.0	
21.37000	22.05000	45.10000	-9.78560	44.950	0.0	-0.0012643	0.0	
21.37000	22.15000	45.10000	-9.76729	44.950	0.0	-0.0012611	0.0	
21.37000	22.25000	45.10000	-9.75143	44.950	0.0	-0.0012578	0.0	
21.37000	22.35000	45.10000	-9.73501	44.950	0.0	-0.0012545	0.0	
21.37000	22.45000	45.10000	-9.71902	44.950	0.0	-0.0012512	0.0	
21.37000	22.55000	45.10000	-9.70344	44.950	0.0	-0.0012478	0.0	
21.37000	22.65000	45.10000	-9.68826	44.950	0.0	-0.0012444	0.0	
21.37000	22.75000	45.10000	-9.67347	44.950	0.0	-0.0012409	0.0	
21.37000	22.85000	45.10000	-9.65906	44.950	0.0	-0.0012374	0.0	
21.37000	22.95000	45.10000	-9.64502	44.950	0.0	-0.0012339	0.0	
21.37000	23.05000	45.10000	-9.63133	44.950	0.0	-0.0012304	0.0	
21.37000	23.15000	45.10000	-9.61798	44.950	0.0	-0.0012268	0.0	
21.37000	23.25000	45.10000	-9.60397	44.950	0.0	-0.0012233	0.0	
21.37000	23.35000	45.10000	-9.59238	44.950	0.0	-0.0012195	0.0	
21.37000	23.45000	45.10000	-9.57901	44.950	0.0	-0.0012158	0.0	
21.37000	23.55000	45.10000	-9.56784	44.950	0.0	-0.0012120	0.0	
21.37000	23.65000	45.10000	-9.55607	44.950	0.0	-0.0012083	0.0	
21.37000	23.75000	45.10000	-9.54459	44.950	0.0	-0.0012045	0.0	
21.37000	23.85000	45.10000	-9.53338	44.950	0.0	-0.0012008	0.0	
21.37000	23.95000	45.10000	-9.52245	44.950	0.0	-0.0011968	0.0	
21.37000	24.05000	45.10000	-9.51178	44.950	0.0	-0.0011929	0.0	
21.37000	24.15000	45.10000	-9.50136	44.950	0.0	-0.0011890	0.0	
21.37000	24.25000	45.10000	-9.49119	44.950	0.0	-0.0011850	0.0	
21.37000	24.35000	45.10000	-9.48126	44.950	0.0	-0.0011771	0.0	
21.37000	24.45000	45.10000	-9.47156	44.950	0.0	-0.0011731	0.0	
21.37000	24.55000	45.10000	-9.46209	44.950	0.0	-0.0011690	0.0	
21.37000	24.65000	45.10000	-9.45284	44.950	0.0	-0.0011658	0.0	
21.37000	24.75000	45.10000	-9.44380	44.950	0.0	-0.0011619	0.0	
21.37000	24.85000	45.10000	-9.43497	44.950	0.0	-0.0011608	0.0	
21.37000	24.95000	45.10000	-9.42634	44.950	0.0	-0.0011567	0.0	
21.37000	25.05000	45.10000	-9.41791	44.950	0.0	-0.0011526	0.0	
21.37000	25.15000	45.10000	-9.40967	44.950	0.0	-0.0011484	0.0	
21.37000	25.25000	45.10000	-9.40161	44.950	0.0	-0.0011442	0.0	
21.37000	25.35000	45.10000	-9.39374	44.950	0.0	-0.0011401	0.0	
21.37000	25.45000	45.10000	-9.38603	44.950	0.0	-0.0011358	0.0	
21.37000	25.55000	45.10000	-9.37850	44.950	0.0	-0.0011325	0.0	
21.37000	25.65000	45.10000	-9.37114	44.950	0.0	-0.0011273	0.0	
21.37000	25.75000	45.10000	-9.36393	44.950	0.0	-0.0011230	0.0	
21.37000	25.85000	45.10000	-9.35689	44.950	0.0	-0.0011187	0.0	
21.37000	25.95000	45.10000	-9.34999	44.950	0.0	-0.0011144	0.0	
21.37000	26.05000	45.10000	-9.34324	44.950	0.0	-0.0011100	0.0	
21.37000	26.15000	45.10000	-9.33664	44.950	0.0	-0.0011057	0.0	
21.37000	26.25000	45.10000	-9.33018	44.950	0.0	-0.0011013	0.0	
21.37000	26.35000	45.10000	-9.32386	44.950	0.0	-0.0010969	0.0	
21.37000	26.45000	45.10000	-9.31767	44.950	0.0	-0.0010925	0.0	
21.37000	26.55000	45.10000	-9.31161	44.950	0.0	-0.0010881	0.0	
21.37000	26.65000	45.10000	-9.30568	44.950	0.0	-0.0010831	0.0	
21.37000	26.75000	45.10000	-9.29988	44.950	0.0	-0.0010793	0.0	
21.37000	26.85000	45.10000	-9.29419	44.950	0.0	-0.0010748	0.0	
21.37000	26.95000	45.10000	-9.28862	44.950	0.0	-0.0010704	0.0	
21.37000	27.05000	45.10000	-9.28317	44.950	0.0	-0.0010659	0.0	
21.37000	27.15000	45.10000	-9.27783	44.950	0.0	-0.0010614	0.0	
21.37000	27.25000	45.10000	-9.27259	44.950	0.0	-0.0010569	0.0	
21.37000	27.35000	45.10000	-9.26747	44.950	0.0	-0.0010524	0.0	
21.37000	27.45000	45.10000	-9.26245	44.950	0.0	-0.0010479	0.0	
21.37000	27.55000	45.10000	-9.25753	44.950	0.0	-0.0010434	0.0	
21.37000	27.65000	45.10000	-9.25270	44.950	0.0	-0.0010389	0.0	
21.37000	27.75000	45.10000	-9.24798	44.950	0.0	-0.0010344	0.0	
21.37000	27.85000	45.10000	-9.24329	44.950	0.0	-0.0010300	0.0	
21.37000	27.95000	45.10000	-9.23881	44.950	0.0	-0.0010253	0.0	
21.37000	28.05000	45.10000	-9.23437	44.950	0.0	-0.0010207	0.0	
21.37000	28.15000	45.10000	-9.23001	44.950	0.0	-0.0010162	0.0	
21.37000	28.25000	45.10000	-9.22574	44.950	0.0	-0.0010116	0.0	
21.37000	28.35000	45.10000	-9.22155	44.950	0.0	-0.0010071	0.0	
21.37000	28.45000	45.10000	-9.21744	44.950	0.0	-0.0010025	0.0	
21.37000	28.55000	45.10000	-9.21341	44.950	0.0	-997.96E-6	0.0	
21.37000	28.65000	45.10000	-9.20946	44.950	0.0	-993.40E-6	0.0	
21.37000	28.75000	45.10000	-9.20559	44.950	0.0	-984.27E-6	0.0	
21.37000	28.85000	45.10000	-9.20180	44.950	0.0	-979.45E-6	0.0	
21.37000	28.95000	45.10000	-9.19704	44.950	0.0	-974.12E-6	0.0	
21.37000	29.05000	45.10000	-9.18442	44.950	0.0	-970.13E-6	0.0	
21.37000	29.15000	45.10000	-9.18084	44.950	0.0	-970.56E-6	0.0	
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**CARD GEOTECHNICS
LIMITED**

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [m]	Y [m]	Z[Level] [mOD]	Displacement Z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
21.37000	33.15000	45.10000	-0.091011	44.950	0.0	-792.25E-6	0.0	
21.37000	33.25000	45.10000	-0.089331	44.950	0.0	-787.99E-6	0.0	
21.37000	33.35000	45.10000	-0.087680	44.950	0.0	-783.75E-6	0.0	
21.37000	33.45000	45.10000	-0.086058	44.950	0.0	-779.52E-6	0.0	
21.37000	33.55000	45.10000	-0.084465	44.950	0.0	-775.30E-6	0.0	
21.37000	33.65000	45.10000	-0.082899	44.950	0.0	-771.10E-6	0.0	
21.37000	33.75000	45.10000	-0.081361	44.950	0.0	-766.91E-6	0.0	
21.37000	33.85000	45.10000	-0.080865	44.950	0.0	-762.74E-6	0.0	
21.37000	33.95000	45.10000	-0.080365	44.950	0.0	-758.58E-6	0.0	
21.37000	34.05000	45.10000	-0.079869	44.950	0.0	-754.42E-6	0.0	
21.37000	34.15000	45.10000	-0.079542	44.950	0.0	-750.31E-6	0.0	
21.37000	34.25000	45.10000	-0.079046	44.950	0.0	-746.19E-6	0.0	
21.37000	34.35000	45.10000	-0.078268	44.950	0.0	-742.09E-6	0.0	
21.37000	34.45000	45.10000	-0.0761320	44.950	0.0	-738.00E-6	0.0	
21.37000	34.55000	45.10000	-0.069983	44.950	0.0	-733.93E-6	0.0	
21.37000	34.65000	45.10000	-0.068670	44.950	0.0	-729.88E-6	0.0	
21.37000	34.75000	45.10000	-0.067379	44.950	0.0	-725.84E-6	0.0	
21.37000	34.85000	45.10000	-0.066111	44.950	0.0	-721.82E-6	0.0	
21.37000	34.95000	45.10000	-0.064864	44.950	0.0	-717.81E-6	0.0	
21.37000	35.05000	45.10000	-0.063639	44.950	0.0	-713.80E-6	0.0	
21.37000	35.15000	45.10000	-0.062435	44.950	0.0	-709.84E-6	0.0	
21.37000	35.25000	45.10000	-0.061252	44.950	0.0	-705.88E-6	0.0	
21.37000	35.35000	45.10000	-0.060089	44.950	0.0	-701.94E-6	0.0	
21.37000	35.45000	45.10000	-0.058946	44.950	0.0	-698.01E-6	0.0	
21.37000	35.55000	45.10000	-0.057823	44.950	0.0	-694.10E-6	0.0	
21.37000	35.65000	45.10000	-0.056719	44.950	0.0	-690.20E-6	0.0	
21.37000	35.75000	45.10000	-0.055634	44.950	0.0	-686.33E-6	0.0	
21.37000	35.85000	45.10000	-0.054567	44.950	0.0	-682.47E-6	0.0	
21.37000	35.95000	45.10000	-0.053519	44.950	0.0	-678.62E-6	0.0	
21.37000	36.05000	45.10000	-0.052489	44.950	0.0	-674.79E-6	0.0	
21.37000	36.15000	45.10000	-0.051476	44.950	0.0	-670.98E-6	0.0	
21.37000	36.25000	45.10000	-0.050460	44.950	0.0	-667.17E-6	0.0	
21.37000	36.35000	45.10000	-0.049501	44.950	0.0	-663.41E-6	0.0	
21.37000	36.45000	45.10000	-0.048540	44.950	0.0	-659.65E-6	0.0	
21.37000	36.55000	45.10000	-0.047594	44.950	0.0	-655.91E-6	0.0	
21.37000	36.65000	45.10000	-0.046664	44.950	0.0	-652.18E-6	0.0	
21.37000	36.75000	45.10000	-0.045751	44.950	0.0	-648.47E-6	0.0	
21.37000	36.85000	45.10000	-0.044852	44.950	0.0	-644.78E-6	0.0	
21.37000	36.95000	45.10000	-0.043969	44.950	0.0	-641.11E-6	0.0	
21.37000	37.05000	45.10000	-0.043101	44.950	0.0	-637.45E-6	0.0	
21.37000	37.15000	45.10000	-0.042248	44.950	0.0	-633.81E-6	0.0	
21.37000	37.25000	45.10000	-0.041409	44.950	0.0	-630.19E-6	0.0	
21.37000	37.35000	45.10000	-0.040584	44.950	0.0	-626.58E-6	0.0	
21.37000	37.45000	45.10000	-0.039774	44.950	0.0	-623.02E-6	0.0	
21.37000	37.55000	45.10000	-0.038976	44.950	0.0	-619.42E-6	0.0	
21.37000	37.65000	45.10000	-0.038193	44.950	0.0	-615.87E-6	0.0	
21.37000	37.75000	45.10000	-0.037422	44.950	0.0	-612.34E-6	0.0	
21.37000	37.85000	45.10000	-0.036665	44.950	0.0	-608.82E-6	0.0	
21.37000	37.95000	45.10000	-0.035920	44.950	0.0	-605.32E-6	0.0	
21.37000	38.05000	45.10000	-0.035188	44.950	0.0	-601.84E-6	0.0	
21.37000	38.15000	45.10000	-0.034468	44.950	0.0	-598.37E-6	0.0	
21.37000	38.25000	45.10000	-0.033761	44.950	0.0	-594.92E-6	0.0	
21.37000	38.35000	45.10000	-0.033065	44.950	0.0	-591.49E-6	0.0	
21.37000	38.45000	45.10000	-0.032383	44.950	0.0	-588.05E-6	0.0	
21.37000	38.55000	45.10000	-0.031708	44.950	0.0	-584.69E-6	0.0	
21.37000	38.65000	45.10000	-0.031047	44.950	0.0	-581.31E-6	0.0	
21.37000	38.75000	45.10000	-0.030397	44.950	0.0	-577.95E-6	0.0	
21.37000	38.85000	45.10000	-0.029758	44.950	0.0	-574.61E-6	0.0	
21.37000	38.95000	45.10000	-0.029392	44.950	0.0	-571.29E-6	0.0	
21.37000	39.05000	45.10000	-0.028511	44.950	0.0	-567.98E-6	0.0	
21.37000	39.15000	45.10000	-0.027904	44.950	0.0	-564.69E-6	0.0	
21.37000	39.25000	45.10000	-0.027306	44.950	0.0	-561.42E-6	0.0	
21.37000	39.35000	45.10000	-0.026719	44.950	0.0	-558.16E-6	0.0	
21.37000	39.45000	45.10000	-0.026161	44.950	0.0	-554.93E-6	0.0	
21.37000	39.55000	45.10000	-0.025573	44.950	0.0	-551.71E-6	0.0	
21.37000	39.65000	45.10000	-0.025015	44.950	0.0	-548.50E-6	0.0	
21.37000	39.75000	45.10000	-0.024466	44.950	0.0	-545.32E-6	0.0	
21.37000	39.85000	45.10000	-0.023926	44.950	0.0	-542.15E-6	0.0	
21.37000	39.95000	45.10000	-0.023395	44.950	0.0	-539.00E-6	0.0	
21.37000	40.05000	45.10000	-0.022873	44.950	0.0	-535.87E-6	0.0	
21.37000	40.15000	45.10000	-0.022360	44.950	0.0	-532.76E-6	0.0	
21.37000	40.25000	45.10000	-0.021856	44.950	0.0	-529.66E-6	0.0	
21.37000	40.35000	45.10000	-0.021359	44.950	0.0	-526.58E-6	0.0	
21.37000	40.45000	45.10000	-0.020871	44.950	0.0	-523.51E-6	0.0	
21.37000	40.55000	45.10000	-0.020392	44.950	0.0	-520.47E-6	0.0	
21.37000	40.65000	45.10000	-0.019920	44.950	0.0	-517.44E-6	0.0	
21.37000	40.75000	45.10000	-0.019456	44.950	0.0	-514.43E-6	0.0	
21.37000	40.85000	45.10000	-0.019000	44.950	0.0	-511.43E-6	0.0	
21.37000	40.95000	45.10000	-0.018552	44.950	0.0	-508.45E-6	0.0	
21.37000	41.05000	45.10000	-0.018131	44.950	0.0	-505.49E-6	0.0	
21.37000	41.15000	45.10000	-0.017767	44.950	0.0	-502.55E-6	0.0	
21.37000	41.25000	45.10000	-0.017251	44.950	0.0	-499.62E-6	0.0	
21.37000	41.35000	45.10000	-0.016832	44.950	0.0	-496.71E-6	0.0	
21.37000	41.45000	45.10000	-0.016419	44.950	0.0	-493.81E-6	0.0	
21.37000	41.55000	45.10000	-0.016014	44.950	0.0	-490.94E-6	0.0	
21.37000	41.65000	45.10000	-0.015616	44.950	0.0	-488.08E-6	0.0	
21.37000	41.75000	45.10000	-0.015224	44.950	0.0	-485.23E-6	0.0	
21.37000	41.85000	45.10000	-0.014838	44.950	0.0	-482.41E-6	0.0	
21.37000	41.95000	45.10000	-0.014460	44.950	0.0	-479.59E-6	0.0	
21.37000	42.05000	45.10000	-0.014087	44.950	0.0	-476.75E-6	0.0	
21.37000	42.15000	45.10000	-0.013721	44.950	0.0	-474.02E-6	0.0	
21.37000	42.25000	45.10000	-0.013361	44.950	0.0	-471.26E-6	0.0	
21.37000	42.35000	45.10000	-0.013036	44.950	0.0	-468.51E-6	0.0	
21.37000	42.45000	45.10000	-0.012658	44.950	0.0	-465.78E-6	0.0	
21.37000	42.55000	45.10000	-0.012316	44.950	0.0	-463.07E-6	0.0	
21.37000	42.65000	45.10000	-0.011979	44.950	0.0	-460.37E-6	0.0	
21.37000	42.75000	45.10000	-0.011648	44.950	0.0	-457.69E-6	0.0	
21.37000	42.85000	45.10000	-0.011323	44.950	0.0	-455.03E-6	0.0	
21.37000	42.95000	45.10000	-0.011003	44.950	0.0	-452.38E-6	0.0	
21.37000	43.05000	45.10000	-0.010688	44.950	0.0	-449.75E-6	0.0	
21.37000	43.15000	45.10000	-0.010379	44.950	0.0	-447.11E-6	0.0	



CARD GEOTECHNICS
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Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location Y [m]	Z[Level] [mOD]	Displacement Z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Stresses Sum Princ [kN/m ²]	Vert Strain [-]
	21.37000	47.25000	45.10000	-0.0013351	44.950	0.0	-352.57E-6	0.0
	21.37000	47.35000	45.10000	-0.0011848	44.950	0.0	-350.55E-6	0.0
	21.37000	47.45000	45.10000	-0.0010372	44.950	0.0	-348.55E-6	0.0
	21.37000	47.55000	45.10000	-0.009210E-6	44.950	0.0	-346.56E-6	0.0
	21.37000	47.65000	45.10000	-749.71E-6	44.950	0.0	-344.58E-6	0.0
	21.37000	47.75000	45.10000	-609.72E-6	44.950	0.0	-342.62E-6	0.0
	21.37000	47.85000	45.10000	-472.19E-6	44.950	0.0	-340.66E-6	0.0
	21.37000	47.95000	45.10000	-337.08E-6	44.950	0.0	-338.72E-6	0.0
	21.37000	48.05000	45.10000	-204.35E-6	44.950	0.0	-336.79E-6	0.0
	21.37000	48.15000	45.10000	-73.11E-6	44.950	0.0	-334.83E-6	0.0
	21.37000	48.25000	45.10000	54.11E-6	44.950	0.0	-332.97E-6	0.0
	21.37000	48.35000	45.10000	179.91E-6	44.950	0.0	-331.08E-6	0.0
16 Kingsland	0.00000	18.35000	45.10000	-2.1868	44.950	-540.84E-6	-0.58776	7.7936E-6
	0.00000	18.45000	45.10000	-2.1360	44.950	-522.79E-6	-0.57085	7.5695E-6
	0.00000	18.55000	45.10000	-2.0858	44.950	-501.93E-6	-0.55260	7.3278E-6
	0.00000	18.65000	45.10000	-2.0368	44.950	-478.08E-6	-0.53304	7.0690E-6
	0.00000	18.75000	45.10000	-1.9892	44.950	-451.23E-6	-0.51226	6.7941E-6
	0.00000	18.85000	45.10000	-1.9430	44.950	-421.54E-6	-0.49039	6.5049E-6
	0.00000	18.95000	45.10000	-1.8982	44.950	-389.46E-6	-0.46764	6.2041E-6
	0.00000	19.05000	45.10000	-1.8546	44.950	-355.67E-6	-0.44422	5.8952E-6
	0.00000	19.15000	45.10000	-1.8120	44.950	-322.90E-6	-0.42089	5.5623E-6
	0.00000	19.25000	45.10000	-1.7772	44.950	-286.61E-6	-0.39693	5.2694E-6
	0.00000	19.35000	45.10000	-1.7290	44.950	-253.32E-6	-0.37361	4.9611E-6
	0.00000	19.45000	45.10000	-1.6885	44.950	-222.01E-6	-0.35092	4.6612E-6
	0.00000	19.55000	45.10000	-1.6485	44.950	-193.27E-6	-0.32912	4.3729E-6
	0.00000	19.65000	45.10000	-1.6091	44.950	-167.44E-6	-0.30838	4.0984E-6
	0.00000	19.75000	45.10000	-1.5702	44.950	-144.62E-6	-0.28882	3.8393E-6
	0.00000	19.85000	45.10000	-1.5319	44.950	-124.73E-6	-0.27049	3.5965E-6
	0.00000	19.95000	45.10000	-1.4943	44.950	-107.56E-6	-0.25340	3.3701E-6
	0.00000	20.05000	45.10000	-1.4574	44.950	-92.84E-6	-0.23753	3.1597E-6
	0.00000	20.15000	45.10000	-1.4213	44.950	-79.29E-6	-0.22281	2.9648E-6
	0.00000	20.25000	45.10000	-1.3859	44.950	-69.60E-6	-0.21016	2.7161E-6
	0.00000	20.35000	45.10000	-1.3514	44.950	-60.13E-6	-0.19671	2.6180E-6
	0.00000	20.45000	45.10000	-1.3176	44.950	-52.77E-6	-0.18152	2.4641E-6
	0.00000	20.55000	45.10000	-1.2847	44.950	-46.18E-6	-0.17442	2.3219E-6
	0.00000	20.65000	45.10000	-1.2527	44.950	-40.54E-6	-0.16453	2.1905E-6
	0.00000	20.75000	45.10000	-1.2216	44.950	-35.72E-6	-0.15538	2.0689E-6
	0.00000	20.85000	45.10000	-1.1913	44.950	-31.58E-6	-0.14691	1.9563E-6
	0.00000	20.95000	45.10000	-1.1618	44.950	-28.01E-6	-0.13905	1.8519E-6
	0.00000	21.05000	45.10000	-1.1332	44.950	-24.92E-6	-0.13177	1.7550E-6
	0.00000	21.15000	45.10000	-1.1054	44.950	-22.25E-6	-0.12500	1.6649E-6
	0.00000	21.25000	45.10000	-1.0785	44.950	-19.92E-6	-0.11870	1.5811E-6
	0.00000	21.35000	45.10000	-1.0523	44.950	-17.80E-6	-0.11239	1.5001E-6
	0.00000	21.45000	45.10000	-1.0270	44.950	-16.18E-6	-0.10735	1.4201E-6
	0.00000	21.55000	45.10000	-1.0024	44.950	-14.54E-6	-0.10224	1.3620E-6
	0.00000	21.65000	45.10000	-9.7950	44.950	-13.16E-6	-0.097453	1.2983E-6
	0.00000	21.75000	45.10000	-9.5535	44.950	-11.94E-6	-0.092972	1.2387E-6
	0.00000	21.85000	45.10000	-9.3290	44.950	-10.86E-6	-0.088770	1.1827E-6
	0.00000	21.95000	45.10000	-9.1112	44.950	-9.8995E-6	-0.084825	1.1302E-6
	0.00000	22.05000	45.10000	-8.8900	44.950	-9.0419E-6	-0.081118	1.0809E-6
	0.00000	22.15000	45.10000	-8.6869	44.950	-8.2753E-6	-0.077630	1.0344E-6
	0.00000	22.25000	45.10000	-8.4896	44.950	-7.5883E-6	-0.074344	0.0
	0.00000	22.35000	45.10000	-8.3029	44.950	-6.9711E-6	-0.071244	0.0
	0.00000	22.45000	45.10000	-8.1854	44.950	-6.4153E-6	-0.068322	0.0
	0.00000	22.55000	45.10000	-8.0333	44.950	-5.9020E-6	-0.065390	0.0
	0.00000	22.65000	45.10000	-7.7565	44.950	-5.4603E-6	-0.062948	0.0
	0.00000	22.75000	45.10000	-7.5847	44.950	-5.0494E-6	-0.060475	0.0
	0.00000	22.85000	45.10000	-7.4177	44.950	-4.6762E-6	-0.058133	0.0
	0.00000	22.95000	45.10000	-7.2555	44.950	-4.3368E-6	-0.055912	0.0
	0.00000	23.05000	45.10000	-7.0977	44.950	-4.0275E-6	-0.053805	0.0
	0.00000	23.15000	45.10000	-6.9494	44.950	-3.7451E-6	-0.051803	0.0
	0.00000	23.25000	45.10000	-6.7950	44.950	-3.4868E-6	-0.049903	0.0
	0.00000	23.35000	45.10000	-6.6649	44.950	-3.2503E-6	-0.048093	0.0
	0.00000	23.45000	45.10000	-6.5608	44.950	-3.0334E-6	-0.046371	0.0
	0.00000	23.55000	45.10000	-6.3707	44.950	-2.8340E-6	-0.044732	0.0
	0.00000	23.65000	45.10000	-6.1836	44.950	-2.6370E-6	-0.043160	0.0
	0.00000	23.75000	45.10000	-6.0163	44.950	-2.4817E-6	-0.041680	0.0
	0.00000	23.85000	45.10000	-5.9791	44.950	-2.3258E-6	-0.040258	0.0
	0.00000	23.95000	45.10000	-5.9853	44.950	-2.1819E-6	-0.038900	0.0
	0.00000	24.05000	45.10000	-5.9745	44.950	-2.0487E-6	-0.037603	0.0
	0.00000	24.15000	45.10000	-5.6168	44.950	-1.9254E-6	-0.036364	0.0
	0.00000	24.25000	45.10000	-5.55021	44.950	-1.8111E-6	-0.035178	0.0
	0.00000	24.35000	45.10000	-5.3902	44.950	-1.7050E-6	-0.034043	0.0
	0.00000	24.45000	45.10000	-5.2810	44.950	-1.6064E-6	-0.032957	0.0
	0.00000	24.55000	45.10000	-5.1745	44.950	-1.5148E-6	-0.031911	0.0
	0.00000	24.65000	45.10000	-5.0706	44.950	-1.4294E-6	-0.030919	0.0
	0.00000	24.75000	45.10000	-4.9893	44.950	-1.3499E-6	-0.029861	0.0
	0.00000	24.85000	45.10000	-4.9071	44.950	-1.2694E-6	-0.028646	0.0
	0.00000	24.95000	45.10000	-4.7734	44.950	-1.2064E-6	-0.028165	0.0
	0.00000	25.05000	45.10000	-4.6790	44.950	-1.1417E-6	-0.027320	0.0
	0.00000	25.15000	45.10000	-4.5458	44.950	-1.0811E-6	-0.026508	0.0
	0.00000	25.25000	45.10000	-4.4496	44.950	-1.0244E-6	-0.025728	0.0
	0.00000	25.35000	45.10000	-4.4088	44.950	-9.608E-7	-0.024978	0.0
	0.00000	25.45000	45.10000	-4.3428	44.950	0.0	-0.024257	0.0
	0.00000	25.55000	45.10000	-4.2388	44.950	0.0	-0.023563	0.0
	0.00000	25.65000	45.10000	-4.1566	44.950	0.0	-0.022895	0.0
	0.00000	25.75000	45.10000	-4.0764	44.950	0.0	-0.022252	0.0
	0.00000	25.85000	45.10000	-3.9897	44.950	0.0	-0.021632	0.0
	0.00000	25.95000	45.10000	-3.9111	44.950	0.0	-0.020460	0.0
	0.00000	26.05000	45.10000	-3.8460	44.950	0.0	-0.019906	0.0
	0.00000	26.15000	45.10000	-3.7726	44.950	0.0	-0.019371	0.0
	0.00000	26.25000	45.10000	-3.7008	44.950	0.0	-0.018954	0.0
	0.00000	26.35000	45.10000	-3.6305	44.950	0.0	-0.018855	0.0
	0.00000	26.45000	45.10000	-3.5618	44.950	0.0	-0.018356	0.0
	0.00000	26.55000	45.10000	-3.4945	44.950	0.0	-0.017876	0.0
	0.00000	26.65000	45.10000	-3.4287	44.950	0.0	-0.017411	0.0
	0.00000	26.75000	45.10000	-3.3301	44.950	0.0	-0.016963	0.0
	0.00000	26.85000	45.10000	-3.2394	44.950	0.0	-0.016110	0.

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [m]	Z[Level] [mOD]	Displacement z [mm]	Stresses			
				Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
0.00000	31.25000	45.10000	-0.14772	44.950	0.0	-0.0062753	0.0
0.00000	31.35000	45.10000	-0.14509	44.950	0.0	-0.0061579	0.0
0.00000	31.45000	45.10000	-0.14252	44.950	0.0	-0.0060434	0.0
0.00000	31.55000	45.10000	-0.13999	44.950	0.0	-0.0059317	0.0
0.00000	31.65000	45.10000	-0.13750	44.950	0.0	-0.0058227	0.0
0.00000	31.75000	45.10000	-0.13506	44.950	0.0	-0.0057163	0.0
0.00000	31.85000	45.10000	-0.13266	44.950	0.0	-0.0056124	0.0
0.00000	31.95000	45.10000	-0.13031	44.950	0.0	-0.0055111	0.0
0.00000	32.05000	45.10000	-0.12799	44.950	0.0	-0.0054121	0.0
0.00000	32.15000	45.10000	-0.12557	44.950	0.0	-0.0053155	0.0
0.00000	32.25000	45.10000	-0.12349	44.950	0.0	-0.0052211	0.0
0.00000	32.35000	45.10000	-0.12130	44.950	0.0	-0.0051289	0.0
0.00000	32.45000	45.10000	-0.11914	44.950	0.0	-0.0050389	0.0
0.00000	32.55000	45.10000	-0.11703	44.950	0.0	-0.0049509	0.0
0.00000	32.65000	45.10000	-0.11495	44.950	0.0	-0.0048650	0.0
0.00000	32.75000	45.10000	-0.11290	44.950	0.0	-0.0047810	0.0
0.00000	32.85000	45.10000	-0.11090	44.950	0.0	-0.0046989	0.0
0.00000	32.95000	45.10000	-0.10892	44.950	0.0	-0.0046187	0.0
0.00000	33.05000	45.10000	-0.10699	44.950	0.0	-0.0045403	0.0
0.00000	33.15000	45.10000	-0.10508	44.950	0.0	-0.0044630	0.0
0.00000	33.25000	45.10000	-0.10316	44.950	0.0	-0.0043616	0.0
0.00000	33.35000	45.10000	-0.10137	44.950	0.0	-0.0043153	0.0
0.00000	33.45000	45.10000	-0.099565	44.950	0.0	-0.0042436	0.0
0.00000	33.55000	45.10000	-0.097789	44.950	0.0	-0.0041734	0.0
0.00000	33.65000	45.10000	-0.096044	44.950	0.0	-0.0041048	0.0
0.00000	33.75000	45.10000	-0.094328	44.950	0.0	-0.0040377	0.0
0.00000	33.85000	45.10000	-0.092642	44.950	0.0	-0.0039722	0.0
0.00000	33.95000	45.10000	-0.090985	44.950	0.0	-0.0039077	0.0
0.00000	34.05000	45.10000	-0.089357	44.950	0.0	-0.0038448	0.0
0.00000	34.15000	45.10000	-0.087756	44.950	0.0	-0.0037832	0.0
0.00000	34.25000	45.10000	-0.086182	44.950	0.0	-0.0037200	0.0
0.00000	34.35000	45.10000	-0.084636	44.950	0.0	-0.0036638	0.0
0.00000	34.45000	45.10000	-0.083115	44.950	0.0	-0.0036060	0.0
0.00000	34.55000	45.10000	-0.081621	44.950	0.0	-0.0035494	0.0
0.00000	34.65000	45.10000	-0.080152	44.950	0.0	-0.0034940	0.0
0.00000	34.75000	45.10000	-0.078708	44.950	0.0	-0.0034397	0.0
0.00000	34.85000	45.10000	-0.077288	44.950	0.0	-0.0033865	0.0
0.00000	34.95000	45.10000	-0.075892	44.950	0.0	-0.0033344	0.0
0.00000	35.05000	45.10000	-0.074520	44.950	0.0	-0.0032834	0.0
0.00000	35.15000	45.10000	-0.073171	44.950	0.0	-0.0032334	0.0
0.00000	35.25000	45.10000	-0.071844	44.950	0.0	-0.0031844	0.0
0.00000	35.35000	45.10000	-0.070540	44.950	0.0	-0.0031352	0.0
0.00000	35.45000	45.10000	-0.069258	44.950	0.0	-0.0030892	0.0
0.00000	35.55000	45.10000	-0.067999	44.950	0.0	-0.0030431	0.0
0.00000	35.65000	45.10000	-0.066758	44.950	0.0	-0.0029979	0.0
0.00000	35.75000	45.10000	-0.065540	44.950	0.0	-0.0029535	0.0
0.00000	35.85000	45.10000	-0.064341	44.950	0.0	-0.0029100	0.0
0.00000	35.95000	45.10000	-0.063163	44.950	0.0	-0.0028673	0.0
0.00000	36.05000	45.10000	-0.062004	44.950	0.0	-0.0028255	0.0
0.00000	36.15000	45.10000	-0.060865	44.950	0.0	-0.0027845	0.0
0.00000	36.25000	45.10000	-0.059745	44.950	0.0	-0.0027442	0.0
0.00000	36.35000	45.10000	-0.058643	44.950	0.0	-0.0027048	0.0
0.00000	36.45000	45.10000	-0.057560	44.950	0.0	-0.0026666	0.0
0.00000	36.55000	45.10000	-0.056494	44.950	0.0	-0.0026281	0.0
0.00000	36.65000	45.10000	-0.055447	44.950	0.0	-0.0025918	0.0
0.00000	36.75000	45.10000	-0.054417	44.950	0.0	-0.0025542	0.0
0.00000	36.85000	45.10000	-0.053403	44.950	0.0	-0.0025183	0.0
0.00000	36.95000	45.10000	-0.052407	44.950	0.0	-0.0024830	0.0
0.00000	37.05000	45.10000	-0.051427	44.950	0.0	-0.0024485	0.0
0.00000	37.15000	45.10000	-0.050463	44.950	0.0	-0.0024145	0.0
0.00000	37.25000	45.10000	-0.049516	44.950	0.0	-0.0023812	0.0
0.00000	37.35000	45.10000	-0.048583	44.950	0.0	-0.0023484	0.0
0.00000	37.45000	45.10000	-0.047667	44.950	0.0	-0.0023163	0.0
0.00000	37.55000	45.10000	-0.046765	44.950	0.0	-0.0022844	0.0
0.00000	37.65000	45.10000	-0.045878	44.950	0.0	-0.0022538	0.0
0.00000	37.75000	45.10000	-0.045006	44.950	0.0	-0.0022230	0.0
0.00000	37.85000	45.10000	-0.044148	44.950	0.0	-0.0021934	0.0
0.00000	37.95000	45.10000	-0.043304	44.950	0.0	-0.0021641	0.0
0.00000	38.05000	45.10000	-0.042474	44.950	0.0	-0.0021352	0.0
0.00000	38.15000	45.10000	-0.041658	44.950	0.0	-0.0021069	0.0
0.00000	38.25000	45.10000	-0.040855	44.950	0.0	-0.0020791	0.0
0.00000	38.35000	45.10000	-0.040066	44.950	0.0	-0.0020517	0.0
0.00000	38.45000	45.10000	-0.039289	44.950	0.0	-0.0020248	0.0
0.00000	38.55000	45.10000	-0.038525	44.950	0.0	-0.0019984	0.0
0.00000	38.65000	45.10000	-0.037773	44.950	0.0	-0.0019725	0.0
0.00000	38.75000	45.10000	-0.037034	44.950	0.0	-0.0019470	0.0
0.00000	38.85000	45.10000	-0.036307	44.950	0.0	-0.0019200	0.0
0.00000	38.95000	45.10000	-0.035992	44.950	0.0	-0.0018972	0.0
0.00000	39.05000	45.10000	-0.034988	44.950	0.0	-0.0018730	0.0
0.00000	39.15000	45.10000	-0.034196	44.950	0.0	-0.0018492	0.0
0.00000	39.25000	45.10000	-0.033515	44.950	0.0	-0.0018257	0.0
0.00000	39.35000	45.10000	-0.032846	44.950	0.0	-0.0018027	0.0
0.00000	39.45000	45.10000	-0.032187	44.950	0.0	-0.0017800	0.0
0.00000	39.55000	45.10000	-0.031539	44.950	0.0	-0.0017578	0.0
0.00000	39.65000	45.10000	-0.030901	44.950	0.0	-0.0017359	0.0
0.00000	39.75000	45.10000	-0.030274	44.950	0.0	-0.0017143	0.0
0.00000	39.85000	45.10000	-0.029658	44.950	0.0	-0.0016931	0.0
0.00000	39.95000	45.10000	-0.029051	44.950	0.0	-0.0016723	0.0
0.00000	40.05000	45.10000	-0.028454	44.950	0.0	-0.0016516	0.0
0.00000	40.25000	45.10000	-0.027289	44.950	0.0	-0.0016316	0.0
0.00000	40.35000	45.10000	-0.026721	44.950	0.0	-0.0015922	0.0
0.00000	40.45000	45.10000	-0.026162	44.950	0.0	-0.0015730	0.0
0.00000	40.55000	45.10000	-0.025612	44.950	0.0	-0.0015541	0.0
0.00000	40.65000	45.10000	-0.025071	44.950	0.0	-0.0015355	0.0
0.00000	40.75000	45.10000	-0.024539	44.950	0.0	-0.0015171	0.0
0.00000	40.85000	45.10000	-0.024015	44.950	0.0	-0.0014994	0.0
0.00000	40.95000	45.10000	-0.023501	44.950	0.0	-0.0014814	0.0
0.00000	41.05000	45.10000	-0.022994	44.950	0.0	-0.0014639	0.0
0.00000	41.15000	45.10000	-0.022496	44.950	0.0	-0.0014467	0.0
0.00000	41.25000	45.10000	-0.022005	44.950	0.0	-0.0014268	0.0
0.00000	41.35000	45.10000	-0.021523	44.950	0.0	-0.0014131	0.0
0.00000	41.45000	45.10000	-0.021048	44.950	0.0	-0.0013967	0.0
0.00000	41.55000	45.10000	-0.020582	44.950	0.0	-0.0013805	0.0
0.00000	41.65000	45.10000	-0.020213	44.950	0.0	-0.0013646	0.0
0.00000	41.75000	45.10000	-0.019671	44.950	0.0	-0.0013490	0.0
0							



CARD GEOTECHNICS
LIMITED

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location Y [m]	Z[Level] [mOD]	Displacement Z [mm]	Calc Level [mOD]	Stresses Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
0.00000	45.35000	45.10000	-0.0074942	44.950	0.0	-914.12E-6	0.0	
0.00000	45.45000	45.10000	-0.0072486	44.950	0.0	-904.90E-6	0.0	
0.00000	45.55000	45.10000	-0.0070070	44.950	0.0	-895.81E-6	0.0	
0.00000	45.65000	45.10000	-0.0067693	44.950	0.0	-886.84E-6	0.0	
0.00000	45.75000	45.10000	-0.0065357	44.950	0.0	-877.99E-6	0.0	
0.00000	45.85000	45.10000	-0.0063058	44.950	0.0	-869.25E-6	0.0	
0.00000	45.95000	45.10000	-0.0060798	44.950	0.0	-861.64E-6	0.0	
0.00000	46.05000	45.10000	-0.0058575	44.950	0.0	-852.13E-6	0.0	
0.00000	46.15000	45.10000	-0.0056389	44.950	0.0	-843.73E-6	0.0	
0.00000	46.25000	45.10000	-0.0054239	44.950	0.0	-835.42E-6	0.0	
0.00000	46.35000	45.10000	-0.0052125	44.950	0.0	-827.27E-6	0.0	
0.00000	46.45000	45.10000	-0.0050046	44.950	0.0	-819.20E-6	0.0	
0.00000	46.55000	45.10000	-0.0048001	44.950	0.0	-811.23E-6	0.0	
0.00000	46.65000	45.10000	-0.0045991	44.950	0.0	-803.37E-6	0.0	
0.00000	46.75000	45.10000	-0.0044014	44.950	0.0	-795.60E-6	0.0	
0.00000	46.85000	45.10000	-0.0042070	44.950	0.0	-787.94E-6	0.0	
0.00000	46.95000	45.10000	-0.0040159	44.950	0.0	-780.37E-6	0.0	
0.00000	47.05000	45.10000	-0.0038279	44.950	0.0	-772.90E-6	0.0	
0.00000	47.15000	45.10000	-0.0036431	44.950	0.0	-765.53E-6	0.0	
0.00000	47.25000	45.10000	-0.0034614	44.950	0.0	-758.24E-6	0.0	
0.00000	47.35000	45.10000	-0.0032747	44.950	0.0	-750.95E-6	0.0	
0.00000	47.45000	45.10000	-0.0030170	44.950	0.0	-743.95E-6	0.0	
0.00000	47.55000	45.10000	-0.0029343	44.950	0.0	-736.94E-6	0.0	
0.00000	47.65000	45.10000	-0.0027645	44.950	0.0	-730.02E-6	0.0	
0.00000	47.75000	45.10000	-0.0025976	44.950	0.0	-723.18E-6	0.0	
0.00000	47.85000	45.10000	-0.0024335	44.950	0.0	-716.43E-6	0.0	
0.00000	47.95000	45.10000	-0.0022721	44.950	0.0	-709.76E-6	0.0	
0.00000	48.05000	45.10000	-0.0021135	44.950	0.0	-703.17E-6	0.0	
0.00000	48.15000	45.10000	-0.0019576	44.950	0.0	-696.66E-6	0.0	
0.00000	48.25000	45.10000	-0.0018043	44.950	0.0	-691.24E-6	0.0	
0.00000	48.35000	45.10000	-0.0016536	44.950	0.0	-683.89E-6	0.0	
Pad A	8.25100	43.70000	-2.6866	43.650	-0.002224	-0.1495	2.0173E-6	
8.19500	8.35100	43.70000	-2.661	43.650	-0.0021892	-0.19276	1.8959E-6	
8.19500	8.05100	43.70000	-2.5235	43.650	-0.0021467	-0.19059	1.9745E-6	
8.19500	7.95100	43.70000	-2.4675	43.650	-0.0021049	-0.18843	1.9533E-6	
8.19500	7.85100	43.70000	-2.4120	43.650	-0.0020636	-0.18628	1.9333E-6	
8.19500	7.75100	43.70000	-2.3662	43.650	-0.0020231	-0.18416	1.9113E-6	
8.19500	7.65100	43.70000	-2.3296	43.650	-0.0019831	-0.18204	1.8905E-6	
8.19500	7.55100	43.70000	-2.3016	43.650	-0.0019439	-0.17995	1.8698E-6	
8.19500	7.45100	43.70000	-2.2811	43.650	-0.0019052	-0.17787	1.8493E-6	
8.19500	7.35100	43.70000	-2.2670	43.650	-0.0018672	-0.17580	1.8289E-6	
8.19500	7.25100	43.70000	-2.2583	43.650	-0.0018299	-0.17370	1.8087E-6	
8.19500	7.15100	43.70000	-2.2593	43.650	-0.0018932	-0.17160	1.7886E-6	
8.19500	7.05100	43.70000	-2.2442	43.650	-0.001771	-0.16972	1.7686E-6	
8.19500	6.95100	43.70000	-2.2377	43.650	-0.0017237	-0.16773	1.7486E-6	
8.19500	6.85100	43.70000	-2.2644	43.650	-0.0016868	-0.16575	1.7222E-6	
8.19500	6.75100	43.70000	-2.2743	43.650	-0.0016527	-0.16380	1.7098E-6	
8.19500	6.65100	43.70000	-2.2874	43.650	-0.0016191	-0.16186	1.6905E-6	
8.19500	6.55100	43.70000	-2.3039	43.650	-0.0015861	-0.15994	1.6714E-6	
8.19500	6.45100	43.70000	-2.3245	43.650	-0.0015538	-0.15804	1.6524E-6	
8.19500	6.35100	43.70000	-2.3498	43.650	-0.0015220	-0.15616	1.6336E-6	
8.19500	6.25100	43.70000	-2.3812	43.650	-0.0014909	-0.15429	1.6150E-6	
8.19500	6.15100	43.70000	-2.4202	43.650	-0.0014603	-0.15245	1.5965E-6	
8.19500	6.05100	43.70000	-2.4693	43.650	-0.0014303	-0.15062	1.5782E-6	
8.19500	5.95100	43.70000	-2.5319	43.650	-0.0014039	-0.14881	1.5602E-6	
8.19500	5.85100	43.70000	-2.6014	43.650	-0.0013721	-0.14722	1.5424E-6	
8.19500	5.75100	43.70000	-2.7167	43.650	-0.0013438	-0.14523	1.5244E-6	
8.19500	5.65100	43.70000	-2.8521	43.650	-0.0013161	-0.14351	1.5068E-6	
8.19500	5.55100	43.70000	-3.0267	43.650	-0.0012889	-0.14178	1.4894E-6	
8.19500	5.45100	43.70000	-3.2483	43.650	-0.0012622	-0.14007	1.4721E-6	
8.19500	5.35100	43.70000	-3.5220	43.650	-0.0012361	-0.13837	1.4551E-6	
8.19500	5.25100	43.70000	-3.8473	43.650	-0.0012105	-0.13670	1.4382E-6	
8.19500	5.15100	43.70000	-4.2155	43.650	-0.0011855	-0.13504	1.4215E-6	
8.19500	5.05100	43.70000	-4.6096	43.650	-0.0011609	-0.13341	1.4049E-6	
8.19500	4.95100	43.70000	-5.0076	43.650	-0.0011368	-0.13179	1.3886E-6	
8.19500	4.85100	43.70000	-5.3868	43.650	-0.0011133	-0.13019	1.3722E-6	
8.19500	4.75100	43.70000	-5.7931	43.650	-0.0010902	-0.12861	1.3564E-6	
8.19500	4.65100	43.70000	-6.0234	43.650	-0.0010676	-0.12705	1.3405E-6	
8.19500	4.55100	43.70000	-6.2662	43.650	-0.0010454	-0.12551	1.3248E-6	
8.19500	4.45100	43.70000	-6.4600	43.650	-0.0010237	-0.12398	1.3033E-6	
8.19500	4.35100	43.70000	-6.6109	43.650	-0.0010025	-0.12248	1.2940E-6	
8.19500	4.25100	43.70000	-6.7265	43.650	-0.0010025	-0.12099	1.2789E-6	
8.19500	4.15100	43.70000	-6.81842	43.650	-0.0010025	-0.11952	1.2639E-6	
8.19500	4.05100	43.70000	-6.8802	43.650	-0.0010025	-0.11807	1.2491E-6	
8.19500	3.95100	43.70000	-6.9296	43.650	-0.0010025	-0.11663	1.2345E-6	
8.19500	3.85100	43.70000	-6.9662	43.650	-0.0010025	-0.11522	1.2200E-6	
8.19500	3.75100	43.70000	-6.9392	43.650	-0.0010025	-0.11380	1.2057E-6	
8.19500	3.65100	43.70000	-6.9116	43.650	-0.0010025	-0.11113	1.1913E-6	
8.19500	3.55100	43.70000	-7.0244	43.650	-0.0010025	-0.11107	1.1776E-6	
8.19500	3.45100	43.70000	-7.0317	43.650	-0.0010025	-0.10972	1.1638E-6	
8.19500	3.35100	43.70000	-7.0344	43.650	-0.0010025	-0.10839	1.1501E-6	
8.19500	3.25100	43.70000	-7.0330	43.650	-0.0010025	-0.10708	1.1367E-6	
8.19500	3.15100	43.70000	-7.0277	43.650	-0.0010025	-0.10578	1.1233E-6	
8.19500	3.05100	43.70000	-7.0187	43.650	-0.0010025	-0.10450	1.1102E-6	
8.19500	2.95100	43.70000	-7.0059	43.650	-0.0010025	-0.10324	1.0972E-6	
8.19500	2.85100	43.70000	-6.9890	43.650	-0.0010025	-0.10199	1.0843E-6	
8.19500	2.75100	43.70000	-6.9676	43.650	-0.0010025	-0.10079	1.0717E-6	
8.19500	2.65100	43.70000	-6.9411	43.650	-0.0010025	-0.099540	1.0591E-6	
8.19500	2.55100	43.70000	-6.9122	43.650	-0.0010025	-0.098217	1.0484E-6	
8.19500	2.45100	43.70000	-6.8732	43.650	-0.0010025	-0.097155	1.0345E-6	
8.19500	2.35100	43.70000	-6.8184	43.650	-0.0010025	-0.095986	1.0225E-6	
8.19500	2.25100	43.70000	-6.7563	43.650	-0.0010025	-0.094832	1.0105E-6	
8.19500	2.15100	43.70000	-6.6779	43.650	-0.0010025	-0.093693	1.0000E-6	
8.19500	2.05100	43.70000	-6.5782	43.650	-0.0010025	-0.092563	9.9000E-7	
8.19500	1.95100	43.70000	-6.4504	43.650	-0.0010025	-0.091459	9.8000E-7	
8.19500	1.85100	43.70000	-6.2863	43.650	-0.0010025	-0.090364	9.7000E-7	
8.19500	1.75100	43.70000	-6.0768	43.650	-0.0010025	-0.089283</		



CARD GEOTECHNICS
LIMITED

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location	Displacement	Stresses				
x [m]	y [m]	z [mOD]	z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
8,19500	-2,74900	43,70000	-0,92559	43,650	-241,09E-6	-0,053008	0,0
8,19500	-2,84900	43,70000	-0,90617	43,650	-236,62E-6	-0,052424	0,0
8,19500	-2,94900	43,70000	-0,88726	43,650	-232,25E-6	-0,051848	0,0
8,19500	-3,04900	43,70000	-0,86885	43,650	-227,96E-6	-0,051280	0,0
8,19500	-3,14900	43,70000	-0,85092	43,650	-223,76E-6	-0,050719	0,0
8,19500	-3,24900	43,70000	-0,83345	43,650	-219,65E-6	-0,050166	0,0
8,19500	-3,34900	43,70000	-0,81641	43,650	-215,63E-6	-0,049619	0,0
8,19500	-3,44900	43,70000	-0,79981	43,650	-211,68E-6	-0,049080	0,0
8,19500	-3,54900	43,70000	-0,78362	43,650	-207,82E-6	-0,048548	0,0
8,19500	-3,64900	43,70000	-0,76732	43,650	-204,00E-6	-0,048010	0,0
8,19500	-3,74900	43,70000	-0,75241	43,650	-200,33E-6	-0,047505	0,0
8,19500	-3,84900	43,70000	-0,73736	43,650	-196,71E-6	-0,046994	0,0
8,19500	-3,94900	43,70000	-0,72267	43,650	-193,15E-6	-0,046489	0,0
8,19500	-4,04900	43,70000	-0,70832	43,650	-189,67E-6	-0,045991	0,0
8,19500	-4,14900	43,70000	-0,69430	43,650	-186,26E-6	-0,045499	0,0
8,19500	-4,24900	43,70000	-0,68061	43,650	-182,92E-6	-0,045013	0,0
8,19500	-4,34900	43,70000	-0,66722	43,650	-179,64E-6	-0,044534	0,0
8,19500	-4,44900	43,70000	-0,65413	43,650	-176,44E-6	-0,044061	0,0
8,19500	-4,54900	43,70000	-0,64134	43,650	-173,29E-6	-0,043595	0,0
8,19500	-4,64900	43,70000	-0,62852	43,650	-170,22E-6	-0,043130	0,0
8,19500	-4,74900	43,70000	-0,61569	43,650	-167,20E-6	-0,042679	0,0
8,19500	-4,84900	43,70000	-0,60460	43,650	-164,24E-6	-0,042230	0,0
8,19500	-4,94900	43,70000	-0,59289	43,650	-161,34E-6	-0,041787	0,0
8,19500	-5,04900	43,70000	-0,58141	43,650	-158,51E-6	-0,041349	0,0
8,19500	-5,14900	43,70000	-0,57018	43,650	-155,72E-6	-0,040917	0,0
8,19500	-5,24900	43,70000	-0,55918	43,650	-153,00E-6	-0,040491	0,0
8,19500	-5,34900	43,70000	-0,54841	43,650	-150,32E-6	-0,040071	0,0
8,19500	-5,44900	43,70000	-0,53787	43,650	-147,71E-6	-0,039654	0,0
8,19500	-5,54900	43,70000	-0,52754	43,650	-145,14E-6	-0,039244	0,0
8,19500	-5,64900	43,70000	-0,51743	43,650	-142,62E-6	-0,038833	0,0
8,19500	-5,74900	43,70000	-0,50752	43,650	-140,15E-6	-0,038430	0,0
8,19500	-5,84900	43,70000	-0,49761	43,650	-137,74E-6	-0,037983	0,0
8,19500	-5,94900	43,70000	-0,48830	43,650	-135,35E-6	-0,037653	0,0
8,19500	-6,04900	43,70000	-0,47898	43,650	-133,04E-6	-0,037268	0,0
8,19500	-6,14900	43,70000	-0,46985	43,650	-130,76E-6	-0,036888	0,0
8,19500	-6,24900	43,70000	-0,46090	43,650	-128,53E-6	-0,036513	0,0
8,19500	-6,34900	43,70000	-0,45213	43,650	-126,34E-6	-0,036142	0,0
8,19500	-6,44900	43,70000	-0,44354	43,650	-124,19E-6	-0,035776	0,0
8,19500	-6,54900	43,70000	-0,43511	43,650	-122,08E-6	-0,035414	0,0
8,19500	-6,64900	43,70000	-0,42685	43,650	-120,02E-6	-0,035057	0,0
8,19500	-6,74900	43,70000	-0,41876	43,650	-117,99E-6	-0,034705	0,0
Pad B	8,49700	43,70000	-2,7166	43,650	-780,20E-6	-0,10552	1.1205E-6
	8,39700	43,70000	-2,6365	43,650	-770,60E-6	-0,10440	1.1145E-6
	8,29700	43,70000	-2,5533	43,650	-761,00E-6	-0,10400	1.0948E-6
	8,19700	43,70000	-2,4701	43,650	-751,54E-6	-0,10324	1.0970E-6
	8,09700	43,70000	-2,4440	43,650	-742,09E-6	-0,10247	1.0891E-6
	7,99700	43,70000	-2,3989	43,650	-732,67E-6	-0,10171	1.0813E-6
	7,89700	43,70000	-2,3633	43,650	-723,32E-6	-0,10095	1.0734E-6
	7,79700	43,70000	-2,3364	43,650	-714,02E-6	-0,10019	1.0656E-6
	7,69700	43,70000	-2,3170	43,650	-704,78E-6	-0,099425	1.0577E-6
	7,59700	43,70000	-2,3042	43,650	-695,60E-6	-0,098665	1.0439E-6
12,07500	7,49700	43,70000	-2,2970	43,650	-686,49E-6	-0,097905	1.0421E-6
12,07500	7,39700	43,70000	-2,2944	43,650	-677,44E-6	-0,097148	1.0343E-6
12,07500	7,29700	43,70000	-2,2716	43,650	-670,20E-6	-0,096552	1.0295E-6
12,07500	7,19700	43,70000	-2,2306	43,650	-664,54E-6	-0,095916	1.0187E-6
12,07500	7,09700	43,70000	-2,2095	43,650	-659,00E-6	-0,094882	1.0109E-6
12,07500	6,99700	43,70000	-2,2139	43,650	-641,92E-6	-0,094131	1.0031E-6
12,07500	6,89700	43,70000	-2,3232	43,650	-633,22E-6	-0,093381	0,0
12,07500	6,79700	43,70000	-2,3478	43,650	-624,59E-6	-0,092633	0,0
12,07500	6,69700	43,70000	-2,3659	43,650	-616,04E-6	-0,091887	0,0
12,07500	6,59700	43,70000	-2,3867	43,650	-607,56E-6	-0,091144	0,0
12,07500	6,49700	43,70000	-2,4104	43,650	-599,16E-6	-0,090403	0,0
12,07500	6,39700	43,70000	-2,4374	43,650	-590,84E-6	-0,089665	0,0
12,07500	6,29700	43,70000	-2,4683	43,650	-582,60E-6	-0,088929	0,0
12,07500	6,19700	43,70000	-2,5040	43,650	-574,43E-6	-0,088194	0,0
12,07500	6,09700	43,70000	-2,5456	43,650	-566,35E-6	-0,087467	0,0
12,07500	5,99700	43,70000	-2,5946	43,650	-558,35E-6	-0,086810	0,0
12,07500	5,89700	43,70000	-2,65451	43,650	-550,43E-6	-0,086016	0,0
12,07500	5,79700	43,70000	-2,7268	43,650	-542,59E-6	-0,085295	0,0
12,07500	5,69700	43,70000	-2,8172	43,650	-534,83E-6	-0,084578	0,0
12,07500	5,59700	43,70000	-2,9312	43,650	-527,16E-6	-0,083864	0,0
12,07500	5,49700	43,70000	-3,0763	43,650	-519,57E-6	-0,083153	0,0
12,07500	5,39700	43,70000	-3,2611	43,650	-512,07E-6	-0,082446	0,0
12,07500	5,29700	43,70000	-3,4947	43,650	-504,64E-6	-0,081743	0,0
12,07500	5,19700	43,70000	-3,7840	43,650	-497,31E-6	-0,081043	0,0
12,07500	5,09700	43,70000	-4,1303	43,650	-490,05E-6	-0,080347	0,0
12,07500	4,99700	43,70000	-4,5257	43,650	-482,89E-6	-0,079657	0,0
12,07500	4,89700	43,70000	-4,9113	43,650	-475,80E-6	-0,079087	0,0
12,07500	4,79700	43,70000	-5,3798	43,650	-468,80E-6	-0,078282	0,0
12,07500	4,69700	43,70000	-5,7833	43,650	-461,89E-6	-0,077602	0,0
12,07500	4,59700	43,70000	-6,1403	43,650	-455,06E-6	-0,076926	0,0
12,07500	4,49700	43,70000	-6,4401	43,650	-448,31E-6	-0,076254	0,0
12,07500	4,39700	43,70000	-6,6824	43,650	-441,65E-6	-0,075586	0,0
12,07500	4,29700	43,70000	-6,8730	43,650	-435,07E-6	-0,074922	0,0
12,07500	4,19700	43,70000	-7,0207	43,650	-428,57E-6	-0,074263	0,0
12,07500	4,09700	43,70000	-7,1343	43,650	-422,16E-6	-0,073607	0,0
12,07500	3,99700	43,70000	-7,2216	43,650	-415,83E-6	-0,072957	0,0
12,07500	3,89700	43,70000	-7,2889	43,650	-409,58E-6	-0,072310	0,0
12,07500	3,79700	43,70000	-7,3609	43,650	-403,41E-6	-0,071661	0,0
12,07500	3,69700	43,70000	-7,3809	43,650	-397,36E-6	-0,071181	0,0
12,07500	3,59700	43,70000	-7,4118	43,650	-391,33E-6	-0,070397	0,0
12,07500	3,49700	43,70000	-7,4352	43,650	-385,40E-6	-0,069769	0,0
12,07500	3,39700	43,70000	-7,4523	43,650	-379,56E-6	-0,069145	0,0
12,07500	3,29700	43,70000	-7,4642	43,650	-373,80E-6	-0,068525	0,0
12,07500	3,19700	43,70000	-7,4712	43,650	-368,11E-6	-0,067910	0,0
12,07500	3,09700	43,70000	-7,4737	43,650	-362,51E-6	-0,067300	0,0
12,07500	2,99700	43,70000	-7,4719	43,650	-356,98E-6	-0,066694	0,0
12,07500	2,89700	43,70000	-7,4656	43,650	-351,53E-6	-0,066098	0,0
12,07500	2,79700	43,70000	-7,4545	43,650	-346,16E-6	-0,065494	0,0
12,07500	2,69700	43,70000	-7,4482	43,650	-340,80E-6	-0,064904	0,0
12,07500	2,59700	43,70000	-7,4156	43,650	-334,64E-6	-0,064416	0,0
12,07500	2,39700	43,70000	-7,3861	43,650	-330,49E-6	-0,063724	0,0
12,07500							



CARD GEOTECHNICS
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Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location y [m]	z [Level] [mOD]	Displacement z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]	
12.07500	-1.50300	43.70000	-1.8386	43.650	-177.30E-6	-0.044127	0.0		
12.07500	-1.60300	43.70000	-1.8074	43.650	-174.57E-6	-0.043724	0.0		
12.07500	-1.70300	43.70000	-1.7765	43.650	-171.89E-6	-0.043325	0.0		
12.07500	-1.80300	43.70000	-1.7460	43.650	-169.25E-6	-0.042930	0.0		
12.07500	-1.90300	43.70000	-1.7157	43.650	-166.65E-6	-0.042539	0.0		
12.07500	-2.00300	43.70000	-1.6856	43.650	-164.09E-6	-0.042151	0.0		
12.07500	-2.10300	43.70000	-1.6558	43.650	-161.58E-6	-0.041768	0.0		
12.07500	-2.20300	43.70000	-1.6262	43.650	-159.11E-6	-0.041386	0.0		
12.07500	-2.30300	43.70000	-1.5968	43.650	-156.67E-6	-0.040992	0.0		
12.07500	-2.40300	43.70000	-1.5676	43.650	-154.23E-6	-0.040531	0.0		
12.07500	-2.50300	43.70000	-1.5385	43.650	-151.92E-6	-0.040270	0.0		
12.07500	-2.60300	43.70000	-1.5096	43.650	-149.60E-6	-0.039905	0.0		
12.07500	-2.70300	43.70000	-1.4808	43.650	-147.32E-6	-0.039544	0.0		
12.07500	-2.80300	43.70000	-1.4520	43.650	-145.08E-6	-0.039186	0.0		
12.07500	-2.90300	43.70000	-1.4234	43.650	-142.87E-6	-0.038831	0.0		
12.07500	-3.00300	43.70000	-1.3948	43.650	-140.70E-6	-0.038481	0.0		
12.07500	-3.10300	43.70000	-1.3662	43.650	-138.56E-6	-0.038133	0.0		
12.07500	-3.20300	43.70000	-1.3378	43.650	-136.46E-6	-0.037789	0.0		
12.07500	-3.30300	43.70000	-1.3094	43.650	-134.39E-6	-0.037449	0.0		
12.07500	-3.40300	43.70000	-1.2810	43.650	-132.36E-6	-0.037122	0.0		
12.07500	-3.50300	43.70000	-1.2526	43.650	-130.33E-6	-0.036777	0.0		
12.07500	-3.60300	43.70000	-1.2248	43.650	-128.38E-6	-0.036447	0.0		
12.07500	-3.70300	43.70000	-1.1969	43.650	-126.45E-6	-0.036120	0.0		
12.07500	-3.80300	43.70000	-1.1693	43.650	-124.54E-6	-0.035796	0.0		
12.07500	-3.90300	43.70000	-1.1419	43.650	-122.67E-6	-0.035476	0.0		
12.07500	-4.00300	43.70000	-1.1149	43.650	-120.82E-6	-0.035158	0.0		
12.07500	-4.10300	43.70000	-1.0883	43.650	-119.01E-6	-0.034844	0.0		
12.07500	-4.20300	43.70000	-1.0621	43.650	-117.22E-6	-0.034533	0.0		
12.07500	-4.30300	43.70000	-1.0363	43.650	-115.46E-6	-0.034225	0.0		
12.07500	-4.40300	43.70000	-1.0111	43.650	-113.74E-6	-0.033920	0.0		
12.07500	-4.50300	43.70000	-9.9836	43.650	-112.04E-6	-0.033605	0.0		
12.07500	-4.60300	43.70000	-9.8619	43.650	-110.35E-6	-0.033320	0.0		
12.07500	-4.70300	43.70000	-9.7393	43.650	-108.72E-6	-0.033024	0.0		
12.07500	-4.80300	43.70000	-9.6154	43.650	-107.10E-6	-0.032731	0.0		
12.07500	-4.90300	43.70000	-9.4926	43.650	-105.51E-6	-0.032441	0.0		
12.07500	-5.00300	43.70000	-9.3708	43.650	-103.94E-6	-0.032155	0.0		
12.07500	-5.10300	43.70000	-9.0493	43.650	-102.40E-6	-0.031871	0.0		
12.07500	-5.20300	43.70000	-8.2837	43.650	-100.88E-6	-0.031589	0.0		
12.07500	-5.30300	43.70000	-8.0791	43.650	-99.38E-6	-0.031311	0.0		
12.07500	-5.40300	43.70000	-7.7879	43.650	-97.91E-6	-0.031036	0.0		
12.07500	-5.50300	43.70000	-7.6785	43.650	-96.47E-6	-0.030763	0.0		
12.07500	-5.60300	43.70000	-7.4795	43.650	-95.05E-6	-0.030493	0.0		
12.07500	-5.70300	43.70000	-7.3019	43.650	-93.65E-6	-0.030224	0.0		
12.07500	-5.80300	43.70000	-7.1309	43.650	-92.27E-6	-0.029961	0.0		
12.07500	-5.90300	43.70000	-6.9555	43.650	-90.25E-6	-0.029699	0.0		
12.07500	-6.00300	43.70000	-6.7648	43.650	-89.59E-6	-0.029440	0.0		
12.07500	-6.10300	43.70000	-6.6186	43.650	-88.28E-6	-0.029183	0.0		
12.07500	-6.20300	43.70000	-6.4657	43.650	-86.99E-6	-0.028929	0.0		
12.07500	-6.30300	43.70000	-6.2929	43.650	-85.72E-6	-0.028678	0.0		
12.07500	-6.40300	43.70000	-6.1459	43.650	-84.47E-6	-0.028429	0.0		
12.07500	-6.50300	43.70000	-5.9968	43.650	-83.24E-6	-0.028183	0.0		
Pad C	15.88900	8.25100	43.70000	-2.5644	43.650	-305.86E-6	-0.060794	0.0	
15.88900	8.15100	43.70000	-2.4694	43.650	-303.19E-6	-0.060481	0.0		
15.88900	8.05100	43.70000	-2.3816	43.650	-300.52E-6	-0.060161	0.0		
15.88900	7.95100	43.70000	-2.2937	43.650	-299.86E-6	-0.059851	0.0		
15.88900	7.85100	43.70000	-2.2335	43.650	-295.18E-6	-0.059535	0.0		
15.88900	7.75100	43.70000	-2.1743	43.650	-292.52E-6	-0.059217	0.0		
15.88900	7.65100	43.70000	-2.1247	43.650	-289.85E-6	-0.058899	0.0		
15.88900	7.55100	43.70000	-2.0838	43.650	-287.20E-6	-0.058580	0.0		
15.88900	7.45100	43.70000	-2.0506	43.650	-284.54E-6	-0.058260	0.0		
15.88900	7.35100	43.70000	-2.0240	43.650	-281.89E-6	-0.057940	0.0		
15.88900	7.25100	43.70000	-2.0032	43.650	-279.24E-6	-0.057618	0.0		
15.88900	7.15100	43.70000	-1.9871	43.650	-276.60E-6	-0.057297	0.0		
15.88900	7.05100	43.70000	-1.9751	43.650	-273.97E-6	-0.056974	0.0		
15.88900	6.95100	43.70000	-1.9667	43.650	-271.34E-6	-0.056652	0.0		
15.88900	6.85100	43.70000	-1.9544	43.650	-268.72E-6	-0.056330	0.0		
15.88900	6.75100	43.70000	-1.9390	43.650	-266.10E-6	-0.056005	0.0		
15.88900	6.65100	43.70000	-1.9194	43.650	-263.51E-6	-0.055681	0.0		
15.88900	6.55100	43.70000	-1.8962	43.650	-260.92E-6	-0.055358	0.0		
15.88900	6.45100	43.70000	-1.8676	43.650	-258.33E-6	-0.055033	0.0		
15.88900	6.35100	43.70000	-1.8378	43.650	-255.76E-6	-0.054709	0.0		
15.88900	6.25100	43.70000	-1.8095	43.650	-253.19E-6	-0.054385	0.0		
15.88900	6.15100	43.70000	-2.0075	43.650	-250.64E-6	-0.054061	0.0		
15.88900	6.05100	43.70000	-2.0296	43.650	-248.10E-6	-0.053737	0.0		
15.88900	5.95100	43.70000	-2.0585	43.650	-245.56E-6	-0.053413	0.0		
15.88900	5.85100	43.70000	-2.0960	43.650	-243.05E-6	-0.053089	0.0		
15.88900	5.75100	43.70000	-2.1450	43.650	-240.54E-6	-0.052769	0.0		
15.88900	5.65100	43.70000	-2.1946	43.650	-238.04E-6	-0.052441	0.0		
15.88900	5.55100	43.70000	-2.2498	43.650	-235.56E-6	-0.052118	0.0		
15.88900	5.45100	43.70000	-2.2072	43.650	-233.10E-6	-0.051795	0.0		
15.88900	5.35100	43.70000	-2.1552	43.650	-230.64E-6	-0.051473	0.0		
15.88900	5.25100	43.70000	-2.1241	43.650	-228.20E-6	-0.051151	0.0		
15.88900	5.15100	43.70000	-2.0978	43.650	-225.78E-6	-0.050829	0.0		
15.88900	5.05100	43.70000	-2.0585	43.650	-223.36E-6	-0.050505	0.0		
15.88900	4.95100	43.70000	-2.0930	43.650	-220.97E-6	-0.050187	0.0		
15.88900	4.85100	43.70000	-2.0258	43.650	-218.59E-6	-0.049867	0.0		
15.88900	4.75100	43.70000	-2.0225	43.650	-216.22E-6	-0.049548	0.0		
15.88900	4.65100	43.70000	-2.0151	43.650	-213.87E-6	-0.049229	0.0		
15.88900	4.55100	43.70000	-2.0002	43.650	-210.54E-6	-0.048907	0.0		
15.88900	4.45100	43.70000	-1.9750	43.650	-209.20E-6	-0.048594	0.0		
15.88900	4.35100	43.70000	-1.9364	43.650	-206.92E-6	-0.048278	0.0		
15.88900	4.25100	43.70000	-1.9211	43.650	-204.63E-6	-0.047962	0.0		
15.88900	4.15100	43.70000	-1.8556	43.650	-202.36E-6	-0.047647	0.0		
15.88900	4.05100	43.70000	-1.5400	43.650	-200.11E-6	-0.047333	0.0		
15.88900	3.95100	43.70000	-1.5487	43.650	-197.87E-6	-0.047020	0.0		
15.88900	3.85100	43.70000	-1.5532	43.650	-195.66E-6	-0.046700	0.0		
15.88900	3.75100	43.70000	-1.5566	43.650	-193.45E-6	-0.046397	0.0		
15.88900	3.65100	43.70000	-1.5719	43.650	-191.27E-6	-0.046087	0.0		
15.88900	3.55100	43.70000	-1.5718						



**CARD GEOTECHNICS
LIMITED**

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location [y] [m]	Z [Level] [mOD]	Displacement z [mm]	Stresses			
					Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]	Vert Strain [-]
15.88900	-0.74900	43.70000	-5.4015	43.650	-112.90E-6	-0.033736	0.0	
15.88900	-0.84900	43.70000	-5.3821	43.650	-111.51E-6	-0.033489	0.0	
15.88900	-0.94900	43.70000	-5.3622	43.650	-110.14E-6	-0.033244	0.0	
15.88900	-1.04900	43.70000	-5.3419	43.650	-108.78E-6	-0.033000	0.0	
15.88900	-1.14900	43.70000	-5.3210	43.650	-107.43E-6	-0.032758	0.0	
15.88900	-1.24900	43.70000	-5.2997	43.650	-106.11E-6	-0.032517	0.0	
15.88900	-1.34900	43.70000	-5.2778	43.650	-104.79E-6	-0.032270	0.0	
15.88900	-1.44900	43.70000	-5.2553	43.650	-103.50E-6	-0.032040	0.0	
15.88900	-1.54900	43.70000	-5.2321	43.650	-102.22E-6	-0.031801	0.0	
15.88900	-1.64900	43.70000	-5.2093	43.650	-101.00E-6	-0.031560	0.0	
15.88900	-1.74900	43.70000	-5.1837	43.650	-99.69E-6	-0.031338	0.0	
15.88900	-1.84900	43.70000	-5.1582	43.650	-98.46E-6	-0.031106	0.0	
15.88900	-1.94900	43.70000	-5.1318	43.650	-97.23E-6	-0.030877	0.0	
15.88900	-2.04900	43.70000	-5.1043	43.650	-96.03E-6	-0.030649	0.0	
15.88900	-2.14900	43.70000	-5.0754	43.650	-94.84E-6	-0.030423	0.0	
15.88900	-2.24900	43.70000	-5.0450	43.650	-93.66E-6	-0.030193	0.0	
15.88900	-2.34900	43.70000	-5.0125	43.650	-92.49E-6	-0.029974	0.0	
15.88900	-2.44900	43.70000	-4.9774	43.650	-91.34E-6	-0.029753	0.0	
15.88900	-2.54900	43.70000	-4.9390	43.650	-90.21E-6	-0.029533	0.0	
15.88900	-2.64900	43.70000	-4.8961	43.650	-89.08E-6	-0.029312	0.0	
15.88900	-2.74900	43.70000	-4.8532	43.650	-87.95E-6	-0.029097	0.0	
15.88900	-2.84900	43.70000	-4.7902	43.650	-86.88E-6	-0.028882	0.0	
15.88900	-2.94900	43.70000	-4.7220	43.650	-85.80E-6	-0.028668	0.0	
15.88900	-3.04900	43.70000	-4.6386	43.650	-84.73E-6	-0.028455	0.0	
15.88900	-3.14900	43.70000	-4.5345	43.650	-83.68E-6	-0.028245	0.0	
15.88900	-3.24900	43.70000	-4.4033	43.650	-82.64E-6	-0.028035	0.0	
15.88900	-3.34900	43.70000	-4.2373	43.650	-81.61E-6	-0.027827	0.0	
15.88900	-3.44900	43.70000	-4.0294	43.650	-80.59E-6	-0.027621	0.0	
15.88900	-3.54900	43.70000	-3.7755	43.650	-79.59E-6	-0.027416	0.0	
15.88900	-3.64900	43.70000	-3.4778	43.650	-78.60E-6	-0.027213	0.0	
15.88900	-3.74900	43.70000	-3.1473	43.650	-77.62E-6	-0.027010	0.0	
15.88900	-3.84900	43.70000	-2.8035	43.650	-76.64E-6	-0.026811	0.0	
15.88900	-3.94900	43.70000	-2.4699	43.650	-75.67E-6	-0.026612	0.0	
15.88900	-4.04900	43.70000	-2.1670	43.650	-74.75E-6	-0.026415	0.0	
15.88900	-4.14900	43.70000	-1.9071	43.650	-73.82E-6	-0.026219	0.0	
15.88900	-4.24900	43.70000	-1.6935	43.650	-72.90E-6	-0.026025	0.0	
15.88900	-4.34900	43.70000	-1.51227	43.650	-72.00E-6	-0.025832	0.0	
15.88900	-4.44900	43.70000	-1.3879	43.650	-71.10E-6	-0.025641	0.0	
15.88900	-4.54900	43.70000	-1.2814	43.650	-70.22E-6	-0.025451	0.0	
15.88900	-4.64900	43.70000	-1.1966	43.650	-69.34E-6	-0.025262	0.0	
15.88900	-4.74900	43.70000	-1.1278	43.650	-68.48E-6	-0.025075	0.0	
15.88900	-4.84900	43.70000	-1.0607	43.650	-67.63E-6	-0.024890	0.0	
15.88900	-4.94900	43.70000	-9.924	43.650	-66.79E-6	-0.024705	0.0	
15.88900	-5.04900	43.70000	-9.9044	43.650	-65.96E-6	-0.024522	0.0	
15.88900	-5.14900	43.70000	-9.8426	43.650	-65.14E-6	-0.024341	0.0	
15.88900	-5.24900	43.70000	-9.0970	43.650	-64.33E-6	-0.024161	0.0	
15.88900	-5.34900	43.70000	-8.7893	43.650	-63.54E-6	-0.023982	0.0	
15.88900	-5.44900	43.70000	-8.05038	43.650	-62.75E-6	-0.023805	0.0	
15.88900	-5.54900	43.70000	-8.2362	43.650	-61.97E-6	-0.023629	0.0	
15.88900	-5.64900	43.70000	-7.9834	43.650	-61.20E-6	-0.023455	0.0	
15.88900	-5.74900	43.70000	-7.7443	43.650	-60.44E-6	-0.023282	0.0	
15.88900	-5.84900	43.70000	-7.5142	43.650	-59.70E-6	-0.023111	0.0	
15.88900	-5.94900	43.70000	-7.2948	43.650	-58.96E-6	-0.022939	0.0	
15.88900	-6.04900	43.70000	-7.0844	43.650	-58.21E-6	-0.022765	0.0	
15.88900	-6.14900	43.70000	-6.8121	43.650	-57.45E-6	-0.022603	0.0	
15.88900	-6.24900	43.70000	-6.56874	43.650	-56.70E-6	-0.022446	0.0	
15.88900	-6.34900	43.70000	-6.4939	43.650	-56.10E-6	-0.022271	0.0	
15.88900	-6.44900	43.70000	-6.31390	43.650	-55.40E-6	-0.022107	0.0	
15.88900	-6.54900	43.70000	-6.16446	43.650	-54.72E-6	-0.021944	0.0	
15.88900	-6.64900	43.70000	-6.05763	43.650	-54.05E-6	-0.021783	0.0	
15.88900	-6.74900	43.70000	-5.98139	43.650	-53.38E-6	-0.021623	0.0	
15.88900	-6.84900	43.70000	-5.65750	43.650	-52.72E-6	-0.021464	0.0	
15.88900	-6.94900	43.70000	-5.55056	43.650	-52.08E-6	-0.021307	0.0	
15.88900	-7.04900	43.70000	-5.35393	43.650	-51.44E-6	-0.021151	0.0	
15.88900	-7.14900	43.70000	-5.2180	43.650	-50.80E-6	-0.020996	0.0	
15.88900	-7.24900	43.70000	-5.0515	43.650	-50.16E-6	-0.020839	0.0	
15.88900	-7.34900	43.70000	-4.9495	43.650	-49.56E-6	-0.020690	0.0	
15.88900	-7.44900	43.70000	-4.8220	43.650	-48.96E-6	-0.020538	0.0	
15.88900	-7.54900	43.70000	-4.6987	43.650	-48.36E-6	-0.020388	0.0	
15.88900	-7.64900	43.70000	-4.5794	43.650	-47.77E-6	-0.020239	0.0	
15.88900	-7.74900	43.70000	-4.44641	43.650	-47.18E-6	-0.020092	0.0	
15.88900	-7.84900	43.70000	-4.35256	43.650	-46.61E-6	-0.019945	0.0	
15.88900	-7.94900	43.70000	-4.24246	43.650	-46.04E-6	-0.019801	0.0	
15.88900	-8.04900	43.70000	-4.14101	43.650	-45.47E-6	-0.019651	0.0	
15.88900	-8.14900	43.70000	-4.0389	43.650	-44.92E-6	-0.019513	0.0	
15.88900	-8.24900	43.70000	-3.93409	43.650	-44.37E-6	-0.019371	0.0	
15.88900	-8.34900	43.70000	-3.8459	43.650	-43.83E-6	-0.019231	0.0	
15.88900	-8.44900	43.70000	-3.7459	43.650	-43.30E-6	-0.019091	0.0	
15.88900	-8.54900	43.70000	-3.6647	43.650	-42.77E-6	-0.018952	0.0	
15.88900	-8.64900	43.70000	-3.5782	43.650	-42.25E-6	-0.018815	0.0	
15.88900	-8.74900	43.70000	-3.4944	43.650	-41.74E-6	-0.018679	0.0	
15.88900	-8.84900	43.70000	-3.4130	43.650	-41.24E-6	-0.018544	0.0	
15.88900	-8.94900	43.70000	-3.3340	43.650	-40.74E-6	-0.018410	0.0	
15.88900	-9.04900	43.70000	-3.2573	43.650	-40.24E-6	-0.018277	0.0	
15.88900	-9.14900	43.70000	-3.1829	43.650	-39.76E-6	-0.018145	0.0	
15.88900	-9.24900	43.70000	-3.1106	43.650	-39.28E-6	-0.018014	0.0	
15.88900	-9.34900	43.70000	-3.0403	43.650	-38.80E-6	-0.017884	0.0	
15.88900	-9.44900	43.70000	-2.9720	43.650	-38.34E-6	-0.017756	0.0	
15.88900	-9.54900	43.70000	-2.9056	43.650	-38.80E-6	-0.017624	0.0	
15.88900	-9.64900	43.70000	-2.8411	43.650	-37.82E-6	-0.017502	0.0	
15.88900	-9.74900	43.70000	-2.7783	43.650	-36.97E-6	-0.017376	0.0	
15.88900	-9.84900	43.70000	-2.7172	43.650	-36.53E-6	-0.017252	0.0	
15.88900	-9.94900	43.70000	-2.6577	43.650	-36.09E-6	-0.017128	0.0	
15.88900	-10.04900	43.70000	-2.5998	43.650	-35.66E-6	-0.017008	0.0	
15.88900	-10.14900	43.70000	-2.5245	43.650	-35.23E-6	-0.016884	0.0	
15.88900	-10.24900	43.70000	-2.44886	43.650	-34.81E-6	-0.016764	0.0	
15.88900	-10.34900	43.70000	-2.34351	43.650	-34.39E-6	-0.016644	0.0	
15.88900	-10.44900	43.70000	-2.23831	43.650	-33.98E-6	-0.016520</td		

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Analysis Options

Analysis: Boussinesq
 Global Poisson's ratio: 0.20
 Maximum allowable ratio between values of E: 1.5
 Horizontal rigid boundary level: 15.00 [m OD]
 Stiffness for horizontal displacement calculations: Weighted average
 Using legacy heave correction factor: No
 Displacements at load centroids: Yes

Soil Profiles

Layer	Level at top	Number of intermediate displacement levels	Youngs Modulus [kN/m²]	Poissons ratio	Non-linear curve
1	46.100	5	15000.	0.20000	None
2	44.500	5	18000.	0.20000	None
3	43.500	5	18000.	0.20000	None

Soil Zones

zone	Name	X coordinates min [m]	X coordinates max [m]	Y coordinates min [m]	Y coordinates max [m]	Profile
1	1	-10.0000	40.0000	-15.0000	55.0000	Soil Profile 1

Non-linear Curve Coordinates - Non-linear Curve 1

Point Strain Factor [%]

Load Data

Load ref.	Name	Shape	Orientation of Plane	Centre of load [m]	Angle of rotation [Degrees]	Width x [m]	Length y [m]	Polygon Coordinates	Number of rectangles	Normal tolerance [local z] [m]	Tangential tolerance [local x] [m]	Load value
1	Porters Lodge Demolition	Polygonal	Horizontal	N/A	N/A	45.00000	N/A	N/A (-1.06,19.1) (-1.06,13.4) (-8.06,13.4) (-8.06,19.1)	10.000	1	-30.000	[kN/m²]

Polygonal Loads' Rectangles

No.	Centre of load [m]	Angle of rotation [Degrees]	Width x [m]	Depth y [m]
1	Porters Lodge Demolition	(Edge 2 optimal)	-4.56400 16.25700	-90.000 5.7500 7.0000
2				

Displacement Data

Ref.	Type	Name	Direction of Extrusion	Line/Line for extrusion			No. of intrvls across	No. of intrvls along	Show extrusion/extrusion	Calculate detailed results
1	Line	Porters Lodge		First point X [m]	Y [m]	Z [level] [m]	Second point X [m]	Y [m]	Z [level] [m]	Depth [m]
2	Grid	Grid 2	Global X	-30.00000	-30.00000	46.10000	N/A	70.00000	46.10000	90
										100

Warnings

(1) One or more displacement grids or lines have numbers of intervals of at least 100. Large numbers of intervals will slow the analysis.

RESULTS FOR GRIDS

Analysis: Boussinesq
 Global Poisson's ratio: 0.20
 Horizontal rigid boundary level: 15.00 [m OD]

The maximum displacement difference between the Boussinesq method (-1.8983mm) and the Mindlin method (-1.8343mm) occurs at point X = -4.56400m, Y = 20.13200m, level = 43.833mOD, and is 0.063983mm.

Name	x [m]	y [m]	z [level] [mOD]	Displacement	Calc Level [mm]	Vert Stress [kN/m²]	Sum Princ [kN/m²]	Vert Strain [-]
Porters Lodge Demolition	-4.56400	16.25700	45.00000	-6.3238	44.875	-29.999	-69.423	-0.0014742
Porters Lodge	-4.56400	19.13200	45.00000	-3.7694	44.875	-15.000	-35.042	-732.74E-6
	-4.56400	19.23200	45.00000	-3.3189	44.875	-3.8982	-19.594	-50.597E-6
	-4.56400	19.33200	45.00000	-3.0342	44.875	-1.0421	-11.876	74.982E-6
	-4.56400	19.43200	45.00000	-2.8156	44.875	-0.37940	-8.1377	78.151E-6
	-4.56400	19.53200	45.00000	-2.6321	44.875	-0.17339	-6.0468	66.752E-6
	-4.56400	19.63200	45.00000	-2.4728	44.875	-0.092209	-4.7349	55.755E-6
	-4.56400	19.73200	45.00000	-2.3118	44.875	-0.054439	-3.8427	46.882E-6
	-4.56400	19.83200	45.00000	-2.2049	44.875	-0.032009	-3.0439	39.939E-6
	-4.56400	19.93200	45.00000	-2.0985	44.875	-0.023351	-2.7169	34.357E-6
	-4.56400	20.03200	45.00000	-1.9893	44.875	-0.016439	-2.3417	29.908E-6
	-4.56400	20.13200	45.00000	-1.8856	44.875	-0.011984	-2.0429	26.280E-6
	-4.56400	20.23200	45.00000	-1.7945	44.875	-0.0089871	-1.7999	23.280E-6
	-4.56400	20.33200	45.00000	-1.7096	44.875	-0.0068999	-1.5999	20.768E-6
	-4.56400	20.43200	45.00000	-1.6300	44.875	-0.0054028	-1.4304	18.640E-6
	-4.56400	20.53200	45.00000	-1.5553	44.875	-0.0043021	-1.2874	16.821E-6
	-4.56400	20.63200	45.00000	-1.4851	44.875	-0.0034754	-1.1648	15.252E-6
	-4.56400	20.73200	45.00000	-1.4190	44.875	-0.0028430	-1.0587	13.889E-6
	-4.56400	20.83200	45.00000	-1.3566	44.875	-0.0022434	-0.9657	12.470E-6
	-4.56400	20.93200	45.00000	-1.3070	44.875	-0.0016567	-0.8514	11.645E-6
	-4.56400	21.03200	45.00000	-1.2423	44.875	-0.0016542	-0.81353	10.715E-6
	-4.56400	21.13200	45.00000	-1.1989	44.875	-0.0014043	-0.74996	9.8872E-6
	-4.56400	21.23200	45.00000	-1.1403	44.875	-0.0012005	-0.69327	9.1476E-6
	-4.56400	21.33200	45.00000	-1.0934	44.875	-0.0010328	-0.64249	8.4840E-6
	-4.56400	21.43200	45.00000	-1.0491	44.875	-0.0008316	-0.59683	7.8862E-6
	-4.56400	21.53200	45.00000	-1.0072	44.875	-0.0007286	-0.55561	7.3459E-6
	-4.56400	21.63200	45.00000	-9.6975	44.875	-679.37E-6	-0.51828	6.8560E-6
	-4.56400	21.73200	45.00000	-9.2929	44.875	-596.44E-6	-0.48437	6.4106E-6
	-4.56400	21.83200	45.00000	-8.89435	44.875	-525.80E-6	-0.45348	6.0043E-6
	-4.56400	21.93200	45.00000	-8.46062	44.875	-465.31E-6	-0.42526	5.6329E-6
	-4.56400	22.03200	45.00000	-8.06063	44.875	-415.79E-6	-0.39571	5.2926E-6
	-4.56400	22.13200	45.00000	-7.69827	44.875	-368.24E-6	-0.35390	4.6933E-6
	-4.56400	22.23200	45.00000	-7.36946	44.875	-329.16E-6	-0.31523	4.1470E-6
	-4.56400	22.33200	45.00000	-7.04208	44.875	-295.09E-6	-0.33380	4.4270E-6
	-4.56400	22.43200	45.00000	-6.71605	44.875	-265.28E-6	-0.31523	4.1819E-6
	-4.56400	22.53200	45.00000	-6.40919	44.875	-239.11E-6	-0.29806	3.9550E-6
	-4.56400	22.63200	45.00000	-6.06772	44.875	-216.05E-6	-0.28215	3.7446E-6
	-4.56400	22.73200	45.00000	-5.64527	44.875	-195.67E-6	-0.26737	3.5493E-6
	-4.56400	22.83200	45.00000	-5.23287	44.875	-177.61E-6	-0.25364	3.3676E-6
	-4.56400	22.93200	45.00000	-5.03046	44.875	-161.56E-6	-0.24085	3.1984E-6
	-4.56400	23.03200	45.00000	-4.83898	44.875	-147.25E-6	-0.22893	3.0406E-6
	-4.56400	23.13200	45.00000	-4.65637	44.875	-134.47E-6	-0.21781	2.8932E-6
	-4.56400	23.23200	45.00000	-4.47559	44.875	-123.75E-6	-0.20619	2.7402E-6
	-4.56400	23.33200	45.00000	-4.30508	44.875	-112.75E-6	-0.19765	2.6244E-6
	-4.56400	23.43200	45.00000	-4.05140	44.875	-103.51E-6	-0.18853	2.5054E-6
	-4.56400	23.53200	45.00000	-3.94981	44.875	-95.174E-6	-0.17996	2.3919E-6
	-4.56400	23.63200	45.00000	-3.84837	44.875	-87.648E-6	-0.17192	2.2853E-6
	-4.56400	23.73200	45.00000	-3.64944	44.875	-80.837E-6	-0.16436	2.1850E-6
	-4.56400	23.83200	45.00000	-3.45570	44.875	-74.662E-6	-0.15724	2.0906E-6
	-4.56400	23.93200	45.00000	-3.04251	44.875	-69.054E-6	-0.15054	2.0016E-6



**CARD GEOTECHNICS
LIMITED**

Barrie House, 29 St Edmunds Terrace, London
Basement Impact Assessment
Long Term Excavation, 4 Storey Structure

Job No.	Sheet No.	Rev.
CG/28408B		
Drg. Ref.		
Made by ALP	Date	Checked

Name	Location [x] [m]	Location y [m]	Z [Level] [mOD]	Displacement		Stresses			Vert Strain [-]
				Z [mm]	Calc Level [mOD]	Vert Stress [kN/m ²]	Sum Princ [kN/m ²]		
-4.56400	24.03200	45.00000	-0.42983	44.875	-63.952E-6	-0.14422	1.9178E-6		
-4.56400	24.13200	45.00000	-0.41766	44.875	-59.303E-6	-0.13825	1.8386E-6		
-4.56400	24.23200	45.00000	-0.40594	44.875	-55.059E-6	-0.13261	1.7637E-6		
-4.56400	24.33200	45.00000	-0.39468	44.875	-51.180E-6	-0.12728	1.6930E-6		
-4.56400	24.43200	45.00000	-0.38383	44.875	-47.629E-6	-0.12224	1.6260E-6		
-4.56400	24.53200	45.00000	-0.37339	44.875	-44.374E-6	-0.11746	1.5626E-6		
-4.56400	24.63200	45.00000	-0.36332	44.875	-41.386E-6	-0.11293	1.5024E-6		
-4.56400	24.73200	45.00000	-0.35362	44.875	-38.640E-6	-0.10864	1.4454E-6		
-4.56400	24.83200	45.00000	-0.34426	44.875	-36.112E-6	-0.10456	1.3912E-6		
-4.56400	24.93200	45.00000	-0.33523	44.875	-33.744E-6	-0.10048	1.3390E-6		
-4.56400	25.03200	45.00000	-0.32652	44.875	-31.634E-6	-0.0971007	1.2909E-6		
-4.56400	25.13200	45.00000	-0.31810	44.875	-29.649E-6	-0.093506	1.2444E-6		
-4.56400	25.23200	45.00000	-0.30979	44.875	-27.814E-6	-0.090173	1.2001E-6		
-4.56400	25.33200	45.00000	-0.30212	44.875	-26.115E-6	-0.086999	1.1579E-6		
-4.56400	25.43200	45.00000	-0.29452	44.875	-24.540E-6	-0.083975	1.1177E-6		
-4.56400	25.53200	45.00000	-0.28717	44.875	-23.080E-6	-0.081098	1.0794E-6		
-4.56400	25.63200	45.00000	-0.28007	44.875	-21.724E-6	-0.078338	1.0428E-6		
-4.56400	25.73200	45.00000	-0.27319	44.875	-20.463E-6	-0.075711	1.0078E-6		
-4.56400	25.83200	45.00000	-0.26652	44.875	-19.290E-6	-0.073201	0.0		
-4.56400	25.93200	45.00000	-0.26007	44.875	-18.198E-6	-0.071000	0.0		
-4.56400	26.03200	45.00000	-0.25382	44.875	-17.120E-6	-0.068508	0.0		
-4.56400	26.13200	45.00000	-0.24776	44.875	-16.231E-6	-0.066313	0.0		
-4.56400	26.23200	45.00000	-0.24189	44.875	-15.344E-6	-0.064212	0.0		
-4.56400	26.33200	45.00000	-0.23620	44.875	-14.516E-6	-0.062200	0.0		
-4.56400	26.43200	45.00000	-0.23067	44.875	-13.741E-6	-0.060272	0.0		
-4.56400	26.53200	45.00000	-0.22531	44.875	-13.016E-6	-0.058423	0.0		
-4.56400	26.63200	45.00000	-0.22201	44.875	-12.336E-6	-0.056651	0.0		
-4.56400	26.73200	45.00000	-0.21506	44.875	-11.700E-6	-0.054950	0.0		
-4.56400	26.83200	45.00000	-0.21016	44.875	-11.020E-6	-0.053317	0.0		
-4.56400	26.93200	45.00000	-0.20539	44.875	-10.542E-6	-0.051749	0.0		
-4.56400	27.03200	45.00000	-0.20077	44.875	-10.015E-6	-0.050249	0.0		
-4.56400	27.13200	45.00000	-0.19627	44.875	-9.517E-6	-0.049154	0.0		
-4.56400	27.23200	45.00000	-0.19190	44.875	-9.0540E-6	-0.047402	0.0		
-4.56400	27.33200	45.00000	-0.18765	44.875	-8.6156E-6	-0.046062	0.0		
-4.56400	27.43200	45.00000	-0.18351	44.875	-8.2027E-6	-0.044773	0.0		
-4.56400	27.53200	45.00000	-0.17949	44.875	-7.8135E-6	-0.043533	0.0		
-4.56400	27.63200	45.00000	-0.17558	44.875	-7.4464E-6	-0.042338	0.0		
-4.56400	27.73200	45.00000	-0.17177	44.875	-7.1001E-6	-0.041186	0.0		
-4.56400	27.83200	45.00000	-0.16807	44.875	-6.7731E-6	-0.040077	0.0		
-4.56400	27.93200	45.00000	-0.16446	44.875	-6.4641E-6	-0.039007	0.0		
-4.56400	28.03200	45.00000	-0.16095	44.875	-6.1721E-6	-0.037979	0.0		
-4.56400	28.13200	45.00000	-0.15753	44.875	-5.8959E-6	-0.036980	0.0		
-4.56400	28.23200	45.00000	-0.15420	44.875	-5.6330E-6	-0.036000	0.0		
-4.56400	28.33200	45.00000	-0.15095	44.875	-5.3715E-6	-0.035093	0.0		
-4.56400	28.43200	45.00000	-0.14779	44.875	-5.1627E-6	-0.034197	0.0		
-4.56400	28.53200	45.00000	-0.14471	44.875	-4.9305E-6	-0.033333	0.0		
-4.56400	28.63200	45.00000	-0.14170	44.875	-4.7198E-6	-0.032497	0.0		
-4.56400	28.73200	45.00000	-0.13877	44.875	-4.5199E-6	-0.031689	0.0		
-4.56400	28.83200	45.00000	-0.13591	44.875	-4.3302E-6	-0.030908	0.0		
-4.56400	28.93200	45.00000	-0.13313	44.875	-4.1500E-6	-0.030153	0.0		
-4.56400	29.03200	45.00000	-0.13041	44.875	-3.9788E-6	-0.029422	0.0		
-4.56400	29.13200	45.00000	-0.12776	44.875	-3.8161E-6	-0.028715	0.0		
-4.56400	29.23200	45.00000	-0.12517	44.875	-3.6614E-6	-0.028030	0.0		
-4.56400	29.33200	45.00000	-0.12264	44.875	-3.5142E-6	-0.027361	0.0		
-4.56400	29.43200	45.00000	-0.12018	44.875	-3.3705E-6	-0.026606	0.0		
-4.56400	29.53200	45.00000	-0.11777	44.875	-3.2407E-6	-0.026104	0.0		
-4.56400	29.63200	45.00000	-0.11542	44.875	-3.1136E-6	-0.025501	0.0		
-4.56400	29.73200	45.00000	-0.11313	44.875	-2.9925E-6	-0.024917	0.0		
-4.56400	29.83200	45.00000	-0.11089	44.875	-2.8771E-6	-0.024351	0.0		
-4.56400	29.93200	45.00000	-0.10870	44.875	-2.7670E-6	-0.023802	0.0		
-4.56400	30.03200	45.00000	-0.10656	44.875	-2.6619E-6	-0.023270	0.0		
-4.56400	30.13200	45.00000	-0.10448	44.875	-2.5617E-6	-0.022753	0.0		
-4.56400	30.23200	45.00000	-0.10244	44.875	-2.4660E-6	-0.022252	0.0		
-4.56400	30.33200	45.00000	-0.10044	44.875	-2.3745E-6	-0.021765	0.0		
-4.56400	30.43200	45.00000	-0.098492	44.875	-2.2871E-6	-0.021293	0.0		
-4.56400	30.53200	45.00000	-0.09657	44.875	-2.2033E-6	-0.020803	0.0		
-4.56400	30.63200	45.00000	-0.094725	44.875	-2.1220E-6	-0.020388	0.0		
-4.56400	30.73200	45.00000	-0.092904	44.875	-2.0474E-6	-0.019955	0.0		
-4.56400	30.83200	45.00000	-0.091123	44.875	-1.9743E-6	-0.019535	0.0		
-4.56400	30.93200	45.00000	-0.089382	44.875	-1.9043E-6	-0.019125	0.0		
-4.56400	31.03200	45.00000	-0.087679	44.875	-1.8374E-6	-0.018728	0.0		
-4.56400	31.13200	45.00000	-0.086013	44.875	-1.7732E-6	-0.018342	0.0		
-4.56400	31.23200	45.00000	-0.084833	44.875	-1.7117E-6	-0.017966	0.0		
-4.56400	31.33200	45.00000	-0.082789	44.875	-1.6528E-6	-0.017601	0.0		
-4.56400	31.43200	45.00000	-0.080129	44.875	-1.5963E-6	-0.017245	0.0		
-4.56400	31.53200	45.00000	-0.079702	44.875	-1.5422E-6	-0.016899	0.0		
-4.56400	31.63200	45.00000	-0.078908	44.875	-1.4902E-6	-0.016562	0.0		
-4.56400	31.73200	45.00000	-0.078146	44.875	-1.4473E-6	-0.016240	0.0		
-4.56400	31.83200	45.00000	-0.075315	44.875	-1.3925E-6	-0.015915	0.0		
-4.56400	31.93200	45.00000	-0.073914	44.875	-1.3465E-6	-0.015604	0.0		
-4.56400	32.03200	45.00000	-0.072542	44.875	-1.3024E-6	-0.015301	0.0		
-4.56400	32.13200	45.00000	-0.071199	44.875	-1.2600E-6	-0.015006	0.0		
-4.56400	32.23200	45.00000	-0.069883	44.875	-1.2192E-6	-0.014719	0.0		
-4.56400	32.33200	45.00000	-0.068595	44.875	-1.1801E-6	-0.014439	0.0		
-4.56400	32.43200	45.00000	-0.067334	44.875	-1.1424E-6	-0.014166	0.0		
-4.56400	32.53200	45.00000	-0.066098	44.875	-1.1062E-6	-0.013901	0.0		
-4.56400	32.63200	45.00000	-0.064888	44.875	-1.0714E-6	-0.013641	0.0		
-4.56400	32.73200	45.00000	-0.063703	44.875	-1.0379E-6	-0.013388	0.0		
-4.56400	32.83200	45.00000	-0.062541	44.875	-1.0056E-6	-0.013144	0.0		
-4.56400	32.93200	45.00000	-0.061403	44.875	-9.750E-7	-0.012865	0.0		
-4.56400	33.03200	45.00000	-0.060288	44.875	0.0	-0.012665	0.0		
-4.56400	33.13200</td								